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L. P. BETHEL, M. D., D. D. S.,
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AFTERMATH.

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CONTRIBUTIONS.

IMPRESSIONS.

(TAKEN AT THE STATE DENTAL SOCIETY.)

BY GRANT MITCHELL, D.D.S., CANTON, O.

DENTISTS may be divided into three general classes, viz: Those who attend societies, those who cannot afford to, and those who do not care to because they "can read all that takes place" in the journals.

To the first two, I dedicate this letter. To the first, because they may not have happened behind these particular scenes. To the second, to call their attention to some of the very practical things one never fails to see and hear at these meetings; things which do not often appear in the "transactions" as published in the journals, and which, I think, show strong reasons why one "cannot afford" to miss them.

The third class we do not try to reach because they only *say* they can "read what takes place", though, in truth, they never do, for, as a rule they do not take the journals at all, or take one, perhaps, to lie (how expressive!) on their centre tables for "effect."

The first impression I took, that was not on the program

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proper, or has not been described heretofore, was that of a device by Dr. Sillito, of Xenia, for regulating, or changing the position of a root that was to be crowned. The device consisted of a small piano-wire spring, anchored to the root, by means of a How screw post, and exerting pressure on the adjoining tooth in the direction desired.

The particular case upon which Dr. Sillito used the appliance is illustrated at Fig. 1. A central incisor root which crowded the adjoining central was to be crowned; the lateral was missing and the space partially filled by the cuspid coming forward. To crown the root in its crowded position would have necessitated grinding the mesial face of the central. To obviate this, Dr. Sillito inserted a How screw post in the root's canal; cut off the screw head, and constructed a small spring, shown at Fig. 1, (a). The drawing shows the appliance in position. By this means he succeeded in moving the root to the position desired.

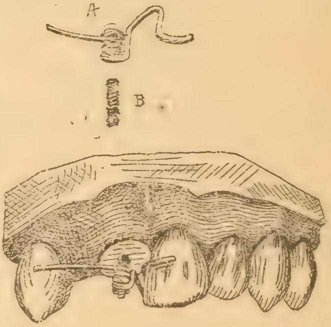


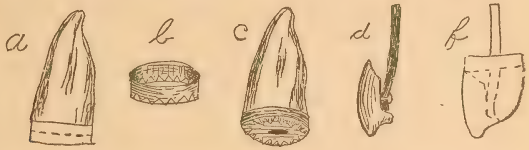
Fig. 1.

The second impression was from a suggestion by Dr. Chas. Welch, inspired by this same case, to the effect that a *double* spring constructed in the same manner, would prove efficient in gaining space in those frequent cases where from varying causes there is not room enough to insert a crown without grinding the faces of the teeth, and narrowing the crown.

The Downey Crown. At the clinic Dr. L. L. Barber, Toledo, made a crown styled the "Downey Crown." It is one of the most cleanly, natural appearing and securely fastened crowns yet presented.

The process of making is as follows: The tooth root is prepared as for a Richmond crown, and a band of platinum fitted to the root and soldered with pure gold.

The band is made wide enough to project a little beyond the end of the root, as shown in cut, Fig. *a;* the dotted lines representing location of end of root. The platinum band is then notched, as represented at *b*, replaced on the root and the protruding points bent in and burnished over the end of the prepared root, as represented at *c*. A tooth of suitable size, shape and shade is next selected, (either an ordinary vulcanite tooth, or a so called plate tooth may be used) and an iridio platinum pin, to extend into root canal, is fastened to the tooth by bending tooth pins around it. This is represented at *d*. The band and tooth are then adjusted to the root, and sticky wax used to hold the parts in apposition. Band and all are then removed from root, Fig. *f*, invested as usual, (powdered silex being preferable to marble dust) wax thoroughly boiled out, porcelain body applied, moulded to shape of crown desired, and baked. The porcelain enamel is extended over the band so that when completed it is one of the most cleanly and natural looking crowns made. This same method may be employed for anchoring bridges.



I took a great many other impressions at this meeting but choose to wait until another time to describe them.

GUM PROTECTOR.

BY HENRY BARNES, D.D.S., CLEVELAND, O.

An easily made and effective device for protecting the gum, is made as follows: Take an Esterbrook pen and break out the points. Now place the pen upon the grind-stone at an angle of about 45° and grind until the shank is ground so that it presents a half-circle at either end, as shown in Fig. 1 A.

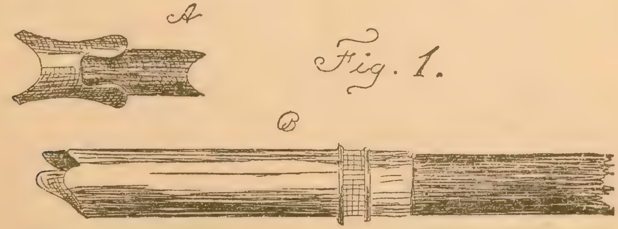
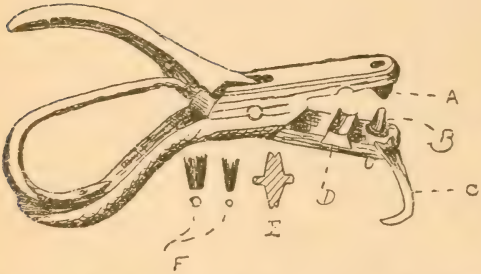


Fig. 1.

Place the pen thus ground in a pen-holder, B, and it makes a good shield to protect the gum tissue when grinding below the gum for the purpose of inserting a crown; especially on the anterior teeth. It is used by placing the ground portion upon the root beneath the gum, then carrying over towards the lips and crowding the gum back. The stone can now be used upon the tooth, running in the grooved portion of the pen, and when finished the tissue is not injured in the least. The large end is used on the superior centrals, and the small end on laterals and inferior roots. It may also be used upon the lingual surface. The method is so simple that further description is unnecessary.

HOW TO MAKE A USEFUL INSTRUMENT.

BY WM. H. STEELE, FOREST CITY, IOWA.



Explanation of Cut.—A, celluloid or vulcanite anvil, for the punch to strike on. B, rubber cutter or punch. C, ligature cutter, partly open and in position for removing the punch. D, copper jaw of point pliers. E, shows middle section of rubber punch. F, points of punch and size of holes. G, reverse end of punch.

The little instrument shown in above cut, has been in constant use in my office for five years, and has proved so useful, that I give my method of making it for the benefit of your readers. Procure of some dealer, an ordinary nickel-plated card punch, such as used by merchants for cancelling sales on credit cards. With a steel punch drive out the cutter, fit into its place a piece of celluloid or vulcanite, having the top rounded, as shown in A. This makes the bed-piece for cutting the rubber on; the top is rounded for the purpose of stretching the rubber dam, as the punch closes down on it.

Next, turn out of a piece of Stubbs' best steel drill rod, the rubber dam punch (E). The two small ends want to be of different size in order to punch the two different size holes; the center, or shoulder, should be large enough to give it a firm seat in the jaw of the instrument; center the small ends and drill into them deep enough to make the cone-shaped holes and cutting edges shown in the cut. Drill a hole in the lower jaw, directly opposite the vulcanite anvil, and entirely through, large enough to take in the largest end of the punch. With a square end drill (or better turn it out in the lathe) enlarge this hole deep enough so it will take in the shoulder of the punch, allowing the top of the shoulder to come flush with the face of the jaw.

To make the point plier combination, close the jaws of the punch and wind them together firmly with wire; center a twist drill between them, and drill a hole through; remove the wire with a file, cut a dove-tail mortise and fit in a piece of copper (D). On the side where the ligature cutter shuts in the copper should be filed down smooth with the face of the jaw sufficient to let the blade close in out of the way when not needed. The balance of the copper should be left high enough to allow the grasping of a cone-socket point without having the rubber punch strike. The next, and last step, is the ligature cutter. Make this from a piece of the very best steel and shape as shown in cut (C). The large end, or shank, should be made concave, with two pointed corners, and should be fastened to the jaw in such a position that one or the other of these corners shall act as a lock to hold the punch in place at all times except when concave end of the blade is exactly in line with the oval shoulder of the punch (as shown in cut). When in this position the punch can be easily removed and reversed. Drill a small hole in the jaw and rivet the blade to place. Do not rivet the head so tight but that it can be opened and closed. This instrument can be made by any one at a cost of one dollar to one dollar and twenty-five cents and will take the place of three instruments costing four dollars and fifty cents.

SULPHURIC ACID FOR OPENING ROOT CANALS.*

BY J. R. CALLAHAN, D.D.S., CINCINNATI, O.

The opening of "Root Canals" has been the subject of much discussion and many wild assertions. We have often heard of dentists who claimed to be able to open to the apex, the root canal or canals in any tooth.

I wish to say that no such claim will be made for the method the canal by dipping the instrument in the solution, or by means that I desire to bring before you to-day. For the opening or enlarging of all straight and unobstructed canals, I prefer and use the "Gates-Glidden" drill after the manner described by Dr. George Evans, in his work on "Artificial Crown and Bridge-Work," third edition, page 21; but, valuable as this instrument may be, we see almost every day in practice, canals that cannot be opened properly by this or any other drill.

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* Read before the Ohio State Dental Society, December, 1893.

It is seldom that we see canals in buccal roots of superior molars, or in roots of lower molars, in which a drill can be used; many times in bicuspids and inferior incisors, the roots are so flat and thin that drilling is dangerous, yet all these canals may be in such condition that we are compelled to open them for treatment and filling. There are canals that are constricted just at the chamber, sometimes so much so that they can scarcely be found, yet the canal in the root is large and should be opened. There are canals in curved roots and canals obstructed by osseous growths, that if not properly opened, would most likely cause trouble. It is with this difficult class of root canals that I wish to deal at this time.

It has been about four years since I began to open this difficult class of canals by using a 20 to 50 % aqueous solution of sulphuric acid and the Donaldson Root Canal Cleanser. To illustrate the method, let us suppose we have a superior molar tooth, from which the pulp tissue has been removed, the palatine root being large, can be prepared by any method you may choose; but let us say, the canals in the buccal roots cannot be found, we would then place a pledget of cotton saturated with the acid solution in that portion of the cavity near the buccal roots and seal it in the tooth for 24 or 48 hours; then upon the removal of the stopping, wash out the cavity with a dash of water from the syringe; upon drying the cavity you will find it white and clean with two dark spots in the vicinity of the buccal roots, showing where the canals can be found. Now we try to enter the canal with the nerve bristle, we find no opening. To make sure we are not being deceived by a constriction we take a bud drill and follow these stains a short distance; if we find no opening, or a very minute opening too small for the bristle, we will feel justified in saying, they need no further treatment. But, if with our exploring instrument we find a canal, we will carry the acid to of the pliars, or better still, the latest pattern of the *Dunn Syringe, place a drop of the agent in the chamber, and with a No. 5 Donaldson Canal Cleanser pump the acid into the canal; the acid will soften the walls of the canal sufficient to allow the broach to cut its way into the root; the acid will also thoroughly sterilize the canal and everything in it. No germ or spore can live in the presence of (H_2 SO_4) in the strength mentioned. The broach may scarcely enter the canal at first, but if you are persistent it will be but a few minutes till the instrument will go quite a distance into the canal until you reach the end of the root, where a much stronger resistance will be met with.

The thickened cementum at this point seeming to offer a greater resistance to the agents used, the canal can then be enlarged by using larger broaches, or if the root is straight the "Gates Glidden" drill will follow the canal just made; it is more than likely that the apical foramen has not yet been opened; this can be accomplished, if desired, by drilling or by placing a small thread of cotton saturated with the acid solution in the end of the root and leaving it there over night, and then using the broach and acid at next sitting; after one or two trials you can readily see how crooked or obstructed canals may be opened in a few minutes, and the canal will be in condition for immediate root filling. It must be borne in mind that the rubber dam should always be in place before the operation is begun; the adjoining teeth may be protected by placing the dam on none but the tooth being operated on.

I confess that at first sight, the application of so strong a solution as 50 %, looks to be rather heroic†; but four years constant use has proven to me that there is little or no danger of injuring the tooth or the surrounding tissue, if the operation be controlled by any sort of common sense. We do not hesitate to use arsenic or nux vomica, aconite, argenti nitras, cocaine and scores of other poisonous drugs. We can have the action of the acid under perfect control. I always keep a saturated solution of bicarbonate soda on the case so that I may stop the action of the acid at any moment. In but few cases is it probable that the acid will go through the apicial foraman in quantities or strength

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*The Dunn Syringe referred to is made of glass and rubber with platinum or gold point.

†Good results may be obtained by the use of weaker solutions, but my desire to present a ten-minute paper, prohibits the mentioning of many details.

sufficient to have any corrosive effect, for the reason that neutralizing agents in the dentine will have materially weakened the acid before it can pass through the extremely small opening at the apex of the root. If there be an abscess present, the foraman is likely to be larger and the condition of the tissues about the apex of the root will be materially benefitted by the presence of the acid even if in the full strength of the solution. In my mind there could be no better agent for the breaking down of the diseased tissues and the positive destruction of all germ life. A case in practice will probably illustrate the point I wish to develop: A lady about 25 or 30 years of age had been under surgical treatment for a large fistula at the symphysis of the chin, came to me at the request of the surgeon for examination and treatment, if I thought the case demanded it; by the aid of the electric light I was enabled to locate the trouble in the two inferior central incisors; the pulp chambers in both teeth were opened; the canal in each tooth was so small that they were practically closed; a drop of the acid solution was placed in the pulp chambers and with a No. 5 Donaldson Root Canal Cleanser, was pumped into the canals; in a few minutes the instrument found its way through the root; the canals were then enlarged by using larger broaches, thereby establishing direct communication from the pulp chamber through the seat of the abscess and through the whole length of the fistula; several drops of the solution was then pumped through the roots into the fistula and made its escape through the opening at the symphysis. On the second day the case was given the usual antiseptic dressing; on the fourth day the roots and fistula were thoroughly filled with chloro-percha, the case was kept under observation for a few days, no signs of inflammation appearing, the case was dismissed as cured. This is one of a number of cases successfully treated in this manner; in this case I do not believe the roots could have been opened in a reasonable time by any other method, and I believe that the acid solution was the best remedial agent that could have been applied at that stage of the treatment. The acid at first attacks the tooth substance vigorously, breaking up the lime salts and corroding or changing the form of the organic substance and forming a new compound, thereby establishing a barrier to the farther progress of the acid. Prof. J. S. Cassidy in his valuable text book, "Dental Chemistry and Materia

Medica," page 77, says: "The acid attacks the earthy portion, forming insoluble calcium sulphate ($Ca\ SO_4$) and at the same time dehydrating the animal or gelatinous portion, which is mainly made up of carbon, hydrogen and oxygen; these two latter elements are withdrawn as already alluded to, leaving the indestructible carbon as a residue, to be incorporated with the insoluble sulphate, producing thus, a protecting covering to the unaffected parts beneath against further inroads both of the causing agent and other solvents.

I have here several specimens which I hope you will examine carefully; as you see, large cavities were cut in sound teeth. The cavity in No. 1 was kept full of a 50 % (by volume) solution of sulphuric acid for ten minutes. The cavity in No. 2 was kept full of same solution for two hours. The cavity in No. 3 was kept full of same solution for 24 hours. The cavity in No. 4 was subjected to no other treatment than to be washed with alcohol. The cavity in No. 5 was filled with same solution on December 1st, at 1 P. M., and kept full till the morning of December 5th, when I placed a pledget of cotton saturated with the solution in the cavity and sealed it in the tooth with wax; this was done that I might bring the tooth to you that you may open and examine for yourselves. In No. 5 the root canals were opened as described by the use of the acid and broaches, and the ends of the roots were then ground off to show the action of the acid on the walls of the root canal near the apex. No 6 received no treatment further than to have the ends of roots ground off the same as No. 5 in order to show the normal appearance of root canal near apex. I think you will be unable to discover any material difference in the appearance of the dentine in Nos. 1, 2 and 3, which I think is proof, that the action of sulphuric acid on tooth substance is self-limited; for we find in this experiment that the acid penetrated the tooth substance practically, no farther in 24 hours than it did in 10 minutes. If, with an excavator, the almost invisible layer of dissolved dentine be removed, a perfectly hard smooth surface will be found. About the root canals specimen (No. 5) you will see what appears to be a small zone of decalcified dentine. A glance at specimen No. 6 will show the same appearance. As to the action of the acid solution on the bone tissue surrounding the roots of the teeth, I quote Mr. George Pollock, F.R.C.S., Surgeon to St. George's Hospital, who says: "Dilute sulphuric acid does not affect the living, acting chemically on diseased bone alone," and gives the following experiments: Portions of dead, diseased and healthy bone were selected and subjected to the action of "sulphuric acid," viz.:—

No. 1.	Dead bone, ...	10	grains.
" 2.	Diseased bone, ...	"	"
" 3.	Healthy bone, (middle age), .	"	"
" 4.	Healthy bone, (old age), . .	"	"

Exposed to the action of a mixture of sulphuric acid and water, one part in four for three days, at a temperature of 100°, the following were the results:

No. 1. Dead bone; phoshate of lime, 2 grs.; carbonate of lime, 3.3 grs. dissolved in the mixture.

No. 2. Diseased bone; phosphate of lime, 2 grs.; carbonate of lime, 1.3 grs. dissolved in the mixture.

Nos. 3 and 4. In both specimens of healthy bone, *no action took place.*

Prof. Garretson says, in his treatment of "Caries of the Maxilla," he used the official ordinary "sulphuric acid." (Garretson's Oral Surgery, third edition, page 705 and 706).

On the soft tissues the solution will have a corrosive and astringent effect; or, in other words, will break down or destroy the diseased tissue, leaving a fresh, clear field for nature to take care of herself with the assistance of milder antiseptic treatment.

DISCUSSION

Dr. Otto Arnold thought this medicament should be used cautiously if at all. In his opinion milder remedies are better for general use—sulphuric acid even in 50% solution is escharotic to the tissues and if any of the acid should get beyond the apex of root its escharotic action might be productive of harm. If there was a fistula the result of such action would be a matter of less importance.

Dr. C. R. Butler said that while there were points in the paper that might seem heroic, they were coupled with advantageous features. It was a question in his mind whether this method had been tried a sufficient length of time to prove that the acid is self-limiting in its action in all cases, and whether it will prove a safe practice. For instance, if used in teeth where the canals are restricted and walls thin, will not the corrosive action of the acid thin down the tooth substance enough to cause damage to these teeth? Again, this acid corrodes steel broaches; he would suggest platinum or gold for the purpose.

Dr. F. A. Hunter. This particular use of sulphuric acid is a new one, but seems to be rational treatment. As I understand the essayist did not advocate its use in every case, but only in those difficult cases where the canals are so minute that they can not be treated otherwise.

Dr. O. N. Heise had used this method and found it an effective one. He thought there was no question about the acid being self-limiting in its action, for it forms sulphate of lime with the inorganic constituents of the teeth and leaves the organic matter which forms a perfect barrier against further action.

Dr. C. M. Wright thought the demonstration practicable and he would go home and try it. The idea was new and apparently a good one.

Dr. J. Taft said the action of this as well as all other medicaments should be thoroughly understood before using. He thought caution should be used in the application of sulphuric acid to tooth substance, but if a small amount should pass through the apex of the root being treated, it would do no material harm, for sulphuric acid has been used time and again in the treatment of alveolar abscess and is one of the best agents we have in many cases.

He thought probable that mischief might be done, however, in too frequent application to canals of certain teeth where the walls are thin, as described by Dr. Butler, but a skillful operator is not liable to fall into an error of this kind. This method, he thought, was a decidedly advanced step for the profession, if judiciously used.

Dr. O. N. Heise said the action of the acid was first on the broach, then on the lime-salts of the tooth and that its action might be spent before all germs had been reached; in this case the application of peroxide of sodium would complete the thorough disinfection.

Dr. L. E. Custer suggested that broaches made of iridio-platinum be employed to apply the acid.

Dr. H. L. Ambler suggested that all cavity margins be thoroughly dressed off, so that no friable tooth substance be left when the tooth cavity is filled.

Dr. J. R. Callahan said he was talking to an intelligent body and did not think it necessary to tell them that this method should not be used in every case presented, the operator's judgment should guide him. He said he had been using this method, in suitable cases, for about four years. He had carefully watched the results and had yet to see the first one that showed any injurious effects or that was not a successful operation. He did not claim that there could be no failures, but had not, as yet, observed any.

He thought the corrosive action on the steel broach assisted in carrying the acid more thoroughly into the canal, and it was also a more effective cleanser. Used once the broach was thrown away.

A NEW PRACTICAL METHOD OF FUSING PLATINUM.*

BY L. E. CUSTER, B.S., D.D.S., DAYTON, O.

The process I am about to describe is one in which electricity is the active agent, so for a clear understanding, technical terms will be avoided as much as possible. Although the perfected process is quite simple, it is the result of considerable study and experimentation.

The production of heat by electricity depends upon two factors, the quantity of electricity and the resistance of the conducting agent. As the quantity is increased the heating power is increased, but this power is not apparent until the current meets with some resistance. The unobstructed flow of any quantity of the fluid does not produce heat. It is only when there is placed in the circuit a poor conductor of electricity that we have this manifestation.

All metals are comparatively good conductors of electricity, yet these vary in their conducting power. Copper stands at one extreme and German silver at the other. In the electric gold annealer, platinum wire is used because it is a poor conductor and does not oxidize. (Experiment with copper and German silver wire.)

The size of the wire is another factor in the determination of heat. With a given length of wire the resistance increases as the diameter of the wire decreases. That is, a small wire has less carrying capacity than a large one, so that when the same amount of current that is easily conducted by the large one, is forced through a small wire, the condensation, I will term it, produces heat. (Experiment with large and small wire.) So with the same quantity of electricity at a given pressure, heat is produced according to the resistance of the conducting agent.

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* Read before the Ohio State Dental Society, December, 1893.

The atmosphere is practically a non-conductor of electricity, yet under certain circumstances it does allow the passage of an electric current. When a current has been established by bringing two terminals together, the electricity continues to flow, even after the ends have been separated. It leaps the intervening thickness of air in the form of the voltaic arc and continues until this distance becomes too great. (Experiment with carbons). This action develops so much heat that it has led to the supposition that electricity is another form of heat. When the oppositely electrical clouds unite it passes through the atmosphere as lightning, when the leyden jar discharges it is the spark, or when it lights the street corner it is the arc. The heat of the arc is so intense that by our present knowledge it cannot be measured. By the ordinary incandescent current I find that we can not only melt platinum and iridium but in small quantities we can vaporize them.

Upon the foregoing I have devised a practical method for making and using the voltaic arc for melting metals of a high fusing point. While it is equally applicable to the "arc current" so called, and 500 and 220 volt currents, I will describe the appliance as adapted to the 110 volt current, that which is used for incandescent lighting and which is the ideal current for dental purposes.

Since a large quantity of current is necessary, the safety plugs should be as large as No. 16 or 18, English standard gauge. A resistance coil of four pounds of No. 18 copper wire will prevent fusing the plug and at the same time give a large arc. This is placed at a convenient point in the circuit. It becomes heated so should be insulated and ventilated on asbestos if it is to be used any length of time.

A block of carbon, such as is used in batteries, is connected with one wire for the receptacle, and a carbon pencil is attached to the other wire. Carbon is used for the receptacle because it is a conductor of electricity, a poor conductor of heat, is non-combustible, and can easily be fashioned to mould the melted metal. An improved bed is composed of ordinary stove blacking and powdered asbestos, equal parts, and thoroughly mixed and united. This is a poor conductor of electricity and is itself heated by the current. It is also a better non-conductor of heat, which is of importance where large quantities are to be melted. A piece of charcoal being a conductor of electricity and a poor conductor of heat, also makes an excellent receptacle. This part of the appliance should be mounted on an asbestos base, or if small quantities are to be fused, it may be held in the left hand by a suitable handle.

In the right hand the carbon pencil is to be used. This is made of an electric light carbon five or six inches long. A hole is drilled two-thirds its length and in this hole is inserted the other terminal wire. This wire is so insulated that only the end comes in contact with the carbon. By this arrangement the upper two-thirds of the pencil, although charged electrically, does not become heated and answers for a handle. With the incandescent current there is no danger to life.

The operation is very simple. The platinum is laid on the carbon bed and the pencil is brought in contact with it. Immediately there is a current established from the pencil through the platinum to the carbon bed or *vice versa*. Upon raising the pencil a short distance an arc is formed directly upon the metal and it is melted. The arc can be carried about at will until the pieces are all brought into one mass.

With the above arrangement from five to eight dwts. may be melted at once but there is no limit to the amount that can be gotten together in one mass by a process of fusing too. It is possible to so manipulate the arc that only part of the mass will be melted and to this more metal added.

THE KOTTS METHOD OF OBTUNDING SENSITIVE DENTINE.

BY F. A. KOTTS, D.D.S., MANCHESTER, MICH.

I WISH to give the readers of "THE OHIO JOURNAL" the benefit of my method of obtunding sensitive dentine, which I know to be good.

First, after applying the rubber dam, fill cavity with solution number one, slightly warmed, followed by continuous blast of warm air, until contents of tubuli is thoroughly extracted. Then apply solution number two directly to the cavity, in a liquid form and also in form of a warm vapor, from a suitable glass cylindered hot air syringe, which will be on market after January 1st, 1894.

When cavity is dry, excavate with small sharp bur, light hand and rapid motion, always cutting from the pulp.

Sol. No. 1.

℞	Absolute Alcohol, ...	1 oz.
	Veratria, ...	8 grs.

Sol. No. 2.

℞	Oil Cassia, ...	50 parts.
	Absolute alcohol, ...	40 “
	Campho-Phenique, ...	5 “
	Carbolic Acid, ...	3 “
	Oil Cloves, ...	2 “

Wash off the tooth before removing the rubber dam.

THERAPEUTICS OF ACONITE AND IODINE IN PERICEMENTITIS.*

BY W. I. JONES, D.D.S., COLUMBUS.

Excepting toothache resulting from irritation of the pulp, there is no other pathological condition of the teeth, so common, and at the same time so distressing, as inflammation of the peridental membrane, and whether it is caused by mechanical violence, poisonous infection, or by some chemical irritant, it is, in either case, unless arrested, as far-reaching in its results and as difficult of treatment, consequently for the cure of this lesion, many remedies have been advised. Among the *drugs* used are aconite and iodine; the first is a sedative to the nervous system, and when applied locally checks inflammation by paralyzing the nerves of the part and reduces the force of the circulation. It has been called the therapeutic lancet, and, Potter says, rightly used, is one of the most valuable drugs we possess. Iodine is alterative, stimulant, and tonic, promotes absorption of the products of inflammation and has been used for the cure of pleuritic effusion, ascites, hydrocele, ovarian dropsy and chronic abscesses. It acts especially as an excitant of the glandular and absorbent systems. Thus we see that one arrests further development of inflammation while the other diffuses the fluids already accumulated. The ways of administering are two: by placing in simple contact with the mucous membrane, and by hypodermic injection into the tissues over the affected teeth. The enepidermic method is, no doubt, universally employed. But the hypodermic administration is probably not practiced as widely as pericementitis is enjoyed. And because it has proved so effective in my own experience, am persuaded that it possesses advantages that the enepidermic does not. The dose is from three to four drops of tincture aconite and iodine in equal parts injected into the loose tissue near the upper border of the alveolus. To insure the best result the point of the needle must be quickly passed beneath the mucous membrane and the contents of the syringe delivered slowly so as not to rupture the tissues. When done accordingly the operation becomes a very simple one. You have only to rightly manipulate the syringe and the drug is exactly where it is needed; is quickly absorbed; does not cause vesication and affords almost immediate relief. Such happy effects I have not obtained by any other remedy and it is thus only, when the aconite and iodine are hypodermically administered.

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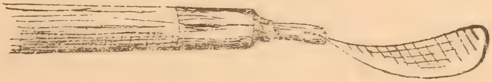
* Read before the Ohio State Dental Society, December, 1893.

SOME USEFUL HINTS.

BY W. M. JENNINGS, D.D.S., CLEVELAND, O.

A useful device for protecting an adjoining tooth or filling in the same, when cutting out an approximal cavity or removing a filling, may be easily made as follows:

Take an old mouth mirror, remove the glass and holder, and with a fine saw, or thin flat file, slit the metal shank, joining handle and mirror, about one-eight of an inch, and into this slot solder a piece of thin flexible steel about one inch long and one-third of an inch wide with corners nicely trimmed and rounded. Press between the teeth and hold in position while shaping cavity next to adjoining tooth. Or, use the shanks of broken burs, solder the thin strips at different angles to facilitate holding easily in various locations and use the Kaeber engine-bur holder as a handle; or, use for a handle a slit broach holder or a jewelers' slit pin vise, insert and clamp thin steel at any angle desired, without soldering. This instrument will be found useful in many ways. May be used as a matrix for plastics, and also for smoothing off the material at cervical margin or removing any pieces that may be left beneath the gums, between the teeth, etc.



One of the best ways I have found to pack amalgam, especially where the tooth is frail, is to use an engine burnisher of proper size, rotating quite rapidly; this not only packs the amalgam harder but draws the excess of mercury to the surface where it can easily be taken up with a piece of tin-foil.

In finishing a gold filling you can prevent the plug finishing bur from clogging up with the metal by dipping into a little sweet oil. It also makes it cut better.

THE "DEVITALIZATION OF PULPS."*

A CONFESSION.

BY C. M. WRIGHT, CINCINNATI.

Having been actively engaged in the practice of dentistry for thirty years, I want to confess that during all this time, I have had trouble and annoyance with the little organs of nutrition which nature, in some freak, developed in the central portions of the teeth. The organs which we classify anatomically, as *pulps* of teeth. Histology has taught us what tissues go to make up these bodies. Physiology tries to satisfy us that their function is a useful one. Embryology has interested us in discussions about their development. Pathology proves to us they are liable to various structural and functional disorders. And Etiology has pointed quite plainly to the causes of the variations from a normal or physiological condition; but with all the knowledge thus offered by these important "ologies"—therapeutics seems sadly at fault, and offers meager means of cure and seemingly unscientific methods. Therapeutics, when applied to disordered pulps, is weak and not progressive.

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* Read before the Ohio State Dental Society, December, 1893.

Thirty years ago we applied arsenious acid, ground up with creosote, sulphate of morphia, charcoal, oil of cloves, etc., etc., in quantities of about one-fiftieth of a grain to "exposed pulps"—and covered the same with cotton and sandarac, or gutta-percha. Thirty years ago the patient left the office of the dentist with the assurance that "possibly there may be a little pain for a while, but the nerve will be killed," and in a quarter of an hour the little pain began, and for hours it increased in size, while the patient raved and swore and knocked himself about, till he returned to the same dentist, or to another more accessible, with blood-shot eyes and agonizing throbs over the entire side of the face and head, to beg for the immediate extraction of the tooth. The dentist did not comply then any easier than he does to-day, but with soothing words and expressions of astonishment at the unusual conduct of this particular case under the application, and fair promises of relief, he removed the plug and the arsenical preparation, washed out the cavity with warm water, pricked the congested pulp until hemorrhage ensued, applied some opium or creosote, or clove oil until the pain became less and dismissed the patient for a day or two.

The same mild fiction with the same tragical environment, is constantly repeated to-day. In the meantime many "sure cure" methods recommended by speakers in dental societies, writers for dental journals, and friends in consultation have been faithfully tried.

1. Cobalt has been substituted for arsenious acid.

2. Pressure of the medicament as a cause of pain instead of the arsenious acid or cobalt has been deeply considered, and saucer-shaped tin disks with the medicine in a comparatively fluid condition have been cautiously placed over the exposed pulps and the cavity filled with gutta-percha, oxysulphate or oxyphosphate mixed with an essential oil.

3. The Clowes "safety pockets" have been faithfully tried and arsenic applied to the dentine and covered up, safe from pressure, and from other possible accidents.

4. Physic has been thrown to the dogs and surgery called

in, and the "knocking out" plan, with a sharpened stick, wet with carbolic acid driven into the straight-rooted teeth, or anesthetics, notably nitrous oxide, have been administered, and sharp burs revolved by the dental engine have been thrust into the pulp chambers.

The Charles Kingsley method of delicately introducing a watchmaker's broach into the canal to the apex along the side of the pulp and rapid twisting of the broach as a final act has been tried once or twice.

A return to drug methods followed and nitrate of silver, nitric acid, creosote, oxide of zinc saturated with creosote, as a capping and slow devitalizer, have all been tried.

After thirty years of constant practice I have to confess with shame, that I still have trouble and by far too large a proportion of failures in this common operation of devitalizing these little organs so that I may remove them perfectly and painlessly from the teeth and put gutta-perch or some other material in their places.

The necessity for removing these bodies is almost a daily one. In my practice, it is an important and exceedingly common operation in dental surgery. It is performed hundreds of times each year, and yet the proportion of failures to perform it speedily, easily, scientifically, and painlessly is appalling. My idea of a successful operation is that when it is desirable to devitalize and extirpate a pulp we should be able to apply a drug which instead of acting as a violent irritant and causing hyperæmia and intense pain, should benumb permanently the nerve fibrils at once, and cause either atrophic changes in the connective and other tissues of the pulp, or rapid degenerations, so that the entire organ can be lifted out or washed out, after a reasonable time has passed, let us say within a week or a month. Arsenious acid does accomplish devitalization, and degenerative changes follow; but its action is so uncertain as regards time and completeness throughout the organ, and so much pain accompanies it that I feel that something else should be by this time evolved from the inner consciousness of dental therapeutic or materia medica experts. In my hands cobalt behaved so much like arsenious acid that I could not detect any clinical difference. The surgical methods seemed applicable in only a limited number of cases and even where I have resorted to nitrous oxide and the bur, difficulties have arisen in the devitalization of the pulp stumps. In the devitalization of perfectly healthy pulps, which have never been irritated to a hyperæmia beyond the normal, the slow methods of capping with creosote and oxide of zinc, sulphate of zinc, etc., are indicated in certain cases; not of course in those cases where we wish to devitalize and extirpate speedily for the special operation of afterwards filling the root canals.

These cases arise in my practice a few times each year, where, after fractures of the crown, malformation of the enamel, etc., crowns of some sort are indicated.

Dr. Frank Abbott is reported as saying, " The only one condition where I think of using any material for devitalizing the pulps of teeth, is where it is impossible to stop pain," and he adds, " I have for the last fifteen years used arsenic in teeth as many as three and four times and no more." Under my hand, where a pulp is fully exposed and where odontalgia ensues on account of exposure, partial or complete, pain can be quieted for a limited period, but in a majority of cases returns at the most inconvenient of times, and these teeth that I have nursed and cared for so tenderly, too frequently present themselves to me in the future, after more thorough operations by some dentist in a neighboring city, or in a summer or winter resort. That is, my operations were temporary and upon a recurrence of pain some other dentist has removed the then devitalized pulp and filled the roots and crowns in a superior manner, leaving me simply the *blush.*

Drs. Witzel, Baume, Herbst, Bödecker and Milier look for succor in the direction of preserving certain portions of the stumps of pulps in the roots of teeth after what might be called a partial devitalization of the coronal portion of the organ. This is it seems to me a compromise between the Abbott school and the removal of the last vestige school, and success may lie between these two stools. Certainly the patient experiments of Dr. Miller in this direction are worthy of our highest interest. A curious phenomenon presents itself in the lives and deaths of these pulps of teeth. If, in crossing a heath instead of pitching my foot against a stone or a watch, as the great Paley might have said, I should experience through the cilliated and other epithelia of the regio olfactory in my nasal passages a stimulation or irritation from the emanations of a defunct rodent, would the pschycological inquiry arise, "Does the rat still feel and hear and see and know? even if putrefactive changes appeal loudly to my senses? Yet as dentists, have we not daily evidence that putrefactive changes may be far advanced in a dentinal pulp, and that acute irritability of nervous tissue remains at the same time? The lymphatic, the connective, and other tissues may be reduced to an almost liquid state of decomposition and yet these nerves which are believed to be trophic in function and can hardly be purely vaso motor, seem to maintain a watchful care over the corpse of the pulp, and they awaken the guard in the centres of sensation, by loud calls for assistance whenever the dentist, acting as a ghoul or undertaker attempts to remove the decomposing corpse from the house (or canal) where it formerly lived. This is an indisputable fact, and this is why I beg of materia medica to offer a medicine, the first quality of which shall be to benumb nervous tissue itself.

WORLD'S COLUMBIAN DENTAL CONGRESS.

(Special Report for THE OHIO DENTAL JOURNAL, by Mrs. J. M. Walker and assistants.)

Continued from page 601.

TREATMENT OF ALVEOLAR PYORRHEA

read by Dr. Caracatsanis was discussed as follows:

DR. TRUMAN. I cannot reconcile this treatment with my ideas of the disease. The gentleman us I understand it, takes the position that he must scarify the gums. To my mind the gums are not the origin of that disease. What is its source? If I understand it, it originates in the pericementum. Pyogenic germs generate there and produce the irritation in the primary stages; as these progress necessarily the pocket deepens, and the gum is left almost intact. Now, why scarify the gums?

If the position I take be the correct one, that it is owing to the microbic influence in the pocket that this disease occurs, then the first thing to do is exactly what this gentleman did, use a powerful agent such as mercuric chlorid in the proper solution.

That is the beginning, then he applies iodin and aconite. Now, I cannot comprehend exactly what effect iodin and aconite will have for the checking of this pathological condition. Aconite, if I understand it, is to obtund the nerves more particularly; it paralyzes the nerves, and prevents by their action the influx of blood to a particular part. Iodin is simply an irritant when used in that position and as far as that goes it has its usefulness; but to my mind, while it may be good, it does not meet the conditions present. We want something more than this. The antiseptic that is used or may be used, whether it is mercuric chlorid, hydronapthol, phenol, or any other agent, must necessarily be used continuously. I think the great mistake made by operators in this direction is that they do not meet the conditions for the future; they consider the case cured when they leave it after perhaps two or three to six weeks. But that is simply the beginning; if the patient is to be treated properly, it must be continued through the balance of the life of that patient. I never would allow a patient to go from my office and tell him the case was cured without giving him the proper remedies to use and proper antiseptics to keep the pathogenic germs from producing further decomposition in the future. Unless explained properly, the patient will only return in a few weeks with the case just as bad as in the beginning.

Dr. Cravens gave his method of treatment as follows:

He said, I have had from one to five cases of pyorrhea alveolaris almost every day, either in the first, second, or third stage, and I have not had a failure of a case in a single tooth or pocket that I have treated.

The first step is to scrape the root of the tooth. I do that after anesthetizing locally, so that it is possible to scrape the root painlessly; then I wash out the pocket with the hot water to get rid of everything that is loose in it. I then apply dilute sulfuric acid, one part of sulfuric acid to ten parts of water, using the common commercial sulfuric acid. I apply it in two ways, with a syringe, or a common quill toothpick, a very useful thing where you wish to use sulfuric acid or nitrate of silver. It is very flexible, and is not affected by any of the acids you use. I want to fill the pocket with this sulfuric acid, that is all; if it escapes in the mouth it will do no harm beyond perhaps etching the teeth a little bit.

That is the end of the first sitting. The sulfuric acid will occasion pain in applying it in that way, but if the operation of scraping has not been very long, you will find that the effect of the cocain will hold over, so that the sulfuric acid will not occasion any pain. I don't care about the strength you use, but if you think the effect of the cocaine has subsided sufficiently to allow the patient to feel the effect of the acid, apply the cocain again.

The second sitting is not a surgical one; the first one should complete the surgical part. I begin with the hot water, and thoroughly wash the pockets as many as four or five times with an ordinary plunger syringe, forcing it in with just as strong a pressure as I can make; then I follow with a ten per cent. solution of nitrate of silver. That solution is not caustic, because you cannot get the pockets totally dry. You leave some of the water there so that when you put your silver solution in it is instantly diluted.

I use just enough to fill the pockets, because if you have an excess, and there are any gold fillings in the mouth, it will discolor them; or if you use a great deal, you might very seriously injure the surface of the teeth. One application of the nitrate of silver ought to be sufficient. Then I discharge the patient without any further treatment at that sitting. For the third I usually allow four days between each sitting, though the period might be increased to six. I wash out with the hot water, and for the nitrate of silver I substitute bromo-chloralum, which you can purchase at any drug-store; I believe it is used for a general disinfectant, embalming fluid, and all sorts of things. It is a powerful astringent. I use it with the full strength and in the same way, either with a syringe or a quill.

There should be but three sittings. If there is pus evident at the third sitting you will have to scrape the tooth again, because you have not done it properly in the beginning. But if it is done properly there will be no pus at the first sitting. I then have the patients come once or twice every one, two, or three weeks, to have the pockets washed out with hot water, and give them a douche of the bromo-chloralum that is diluted perhaps one to five or six, and I take occasion to examine the case to see if it is all right; but there has been no case where there was a recurrence of pus.

Dr. W. J. Barton. The absolute similarity of the treatment is not so important, so that the surgical operation is thorough, so that the treatment is thoroughly antiseptic and cleansing, and the pockets are kept cleansed for the time. That is a very excellent mode of treatment; I like it very much. I have had in my practice cases of seemingly successful cure, and I proceeded in about the same course of treatment.

Dr. Harroun also gave his testimony to the success of Dr. Craven's method, in his own practice.

Dr. Hart. The treatment I have pursued has been very simple. I take it for granted the disease is a disease of the periosteum of the tooth, and the periosteum is dead so far as the disease has advanced. It will go almost to the apex of the tooth, and perhaps three-quarters of the way around.

I begin with a treatment of bichlorid of chinoidin, I only use this once, and the next time my patient comes I make a band of No. 60 gold, that goes down clear underneath the gum as far as the pocket has gone, and put it on, encircling the tooth on the other side also, and cement that firmly in position, and I have the best kind of success. The disease seemed to stop after passing that band of pure gold underneath the gum, of course removing all calculus that might be present, but sometimes there is not any.

To allay inflammation I use europhen in a saturated solution in campho-phenique. I use a mouth-wash of hydronapthol, and it is a splendid mouth-wash.

Dr. A. O. Rawls. I claim that the original cause of this condition is either inherited or acquired, and a result of the use of mercury. Very often inherited, too, from two to three generations. All you can do by your treatment is to arrest it for the time being. There is no special medicament that is better than a perfect surgical operation, but I apprehend the majority of surgical operations in these cases do not go far enough; they only reach the root of the tooth. In most of those operations you are compelled to go beyond the root of the tooth. The process, as a rule, is broken down, the membrane is entirely swept away, and unless you reach the farthest limit you will have no cure. As to the treatment once or twice being successful in all cases. Very often cases which are called typical cases of pyorrhea you will often find are nothing in the world but the result of uncleanliness and negligence, and the accumulation of tartar around the teeth.

Dr. Taylor. I should say from this diversity of opinion that there were two kinds of pyorrhea alveolaris, the one we meet in the office and the one we meet in conventions. The ones we meet in conventions are very easily treated, but those we have to deal with in practice are very difficult, and cause us much trouble and tribulation.

Dr. J. Y. Crawford. We have one distinguished member of the dental profession in this country who has made a statement in reference to this condition and its management, and I regard that statement as sufficient to settle at once the character of this disease: that it is a local manifestation depending upon constitutional conditions in some cases and local conditions in others. This gentleman made the statement that it was a self-evident disease; that he challenged the world to find a single solitary case that did not get well when the teeth are all taken out. That was Dr. H. W. Morgan, of Nashville, Tenn., and to my mind it was the most philosophic expression I have ever heard made upon the subject.

Now, I want to say in the treatment of this disease, as in other forms of diseases of the mouth, two wrongs have existed; one is that in the management of them too vigorous surgery is in many cases applied, and another is too much medication. When you get the parts in a condition of improvement and comfort, let it alone and keep it away from any and all medicine. There is no use to put anything in whatever, if comfort obtains and the process of restoration is established. When you get the effect of your treatment, and a condition of comfort established, let it alone unless some condition arises that demands attention. What medicines you do use let them be intelligently selected; don't put in a septic cavity or during the septic condition a counter-irritant.

Dr. Hoff. I do not believe that this disease is always or that it is often of local origin. I believe that it is systemic, and I think you will find in these very bad cases of pyorrhea alveolaris, that all the patients are troubled with diseases especially of the eliminating organs of the body, the kidneys, the liver, and so on. I think where we make the mistake is, in not taking into consideration the systemic condition of the patient; and I think when we get fully to understand this disease we will find it has a closer relation to the system and disturbances of the body than we now realize.

Dr. Cravens, in reply to the preceding speakers, said that the best refutation he could make would be to invite the gentlemen to come to his office and make an inspection of the cases referred to.

TREATMENT OF ABSCESS OF THE MAXILLANY SINUS.

by Dr. E. Lecaudey, of Paris, France, was read by Professor Barrie, of Paris.

He said, during the course of thirty years I have cured among my clients over sixty cases or abscess of the maxillary sinus.

Having been a long time studying the subject, I once read a thesis by Dr. Veillard, treating of anal fistula, in which was described treatment with zinc chlorid. The idea then struck me to apply the treatment to fistula of the sinus, and I obtained most excellent results.

The cases which I have oftenest treated were caused by the second bicuspid; less frequently, by the cuspid and first molar. The treatment has generally lasted from eight to twent-one days, and has never lasted more than six weeks.

After having performed the extraction, I wash the cavity of the sinus with hydrogen peroxid; then I inject the following:

Chlorid of zinc, ...	1	gram;
Phenic acid, ...	.5	"
Distilled water, ...	100	"

In order to keep the fistula open, I place a little silk string, saturated with wax: and if, as rarely occurs, it will not close up, I take a small pencil of gutta-percha, which I saturate with a little chlorid of zinc, place it for twenty-four hours inside of the fistula, and the edges close up by deep cicatrization very rapidly.

I have never had, owing to this method of treatment, any repetition of the disease.

Prof. Barrie next read a paper by Mr. Denis, of Paris, France, entitled,

BORACINE (TETRABORATE OF SODA).

In one of the last numbers of *L'Odontologie* there appeared a most interesting article, treating of the antiseptic properties of boro-borax.

For some time past I have used an identical process, and a similar substance called boracine. It is a salt, perfectly purified, resulting from the combination of equal parts of borax and boric acid. This tetraborate of soda is neither caustic, toxic, nor irritating properties that often belong to antiseptics. Moreover, it has the advantage of being tasteless and odorless, and of dissolving in the proportion of sixteen per cent. I have tested the value of these products, and these are the observations which I have made. First, I have employed it for the disinfection of the dentinal tubuli, and I must say that the results were very satisfactory. I have also applied it in the treatment of the mucous membrane, in which case it has given me astonishing results.

The details of the treatment of several cases were given, the conclusion reached being—

A paper was read by Dr. Geo. W. Whitefield, of Evanston, Ill., entitled,

CONSERVATIVE METHOD OF TREATING FRACTURES OF THE ANTERIOR TEETH.

He said, as long as children play and stone sidewalks are hard, so long will teeth occasionally be broken off. Sometimes a whole tooth is knocked out or broken off at the gum line, but more often a corner is just chipped. Again, the whole incising edge is snapped off far enough down to involve the pulp. What should be done in such cases? These accidents most often occur in childhood, so that we, as conscientious practitioners, must consider what is best, not only to remedy the present disfigurement, but also to secure the best results for a lifetime.

For these growing patients, the extirpation of the pulp, and placing a crown should be the last resort.

Several cases in practice were then related. The conservative treatment of a pulp exposed through the fracture of a central incisor, is thus given: With bibulous paper I removed the blood from the exposed portion of the pulp, bathing with a mild antiseptic, and after thoroughly drying the fractured end of the tooth, including the exposed portion of the pulp, I flowed collodion over the pulp, allowing it to extend to a short distance beyond the exposure. After this was dry I repeated the operation two or three times, then before the last coat was quite dry I covered the spot with a small piece of No. 4 gold foil. I repeated this operation with the collodion and gold foil several times; then being careful to remove all the collodion from the margins, I flowed Justi's cement mixed to a cream over the end of the tooth, partially restoring its contour. Little more than two months later, finding the pulp alive and not very sensitive, I fitted an open-faced gold-crown to the tooth.

In another case where a central incisor was so broken that when ground to a straight edge it was left one-eighth of an inch shorter than the other central, he proceeded as follows:

I fitted a gold cap extending to the gingival margin, soldering a hook on the labial surface close up to the gum line.

At another operation I adjusted bands around the lateral and remaining central near the excising edge, each having a loop of hollow wire soldered on the labial surface. Taking a piece of fine piano wire I filed it down so that it would bend as a bow. Resting it in the loops in the bands on either side of the broken tooth, I sprung the piece of steel into the hook on the gold crown,—a very weak spring was all that was needed to bring the tooth to the line with its mate.

The moving of the tooth was accomplished in less than a week, with no disturbance to the pulp. This method is applicable to partially erupted teeth, only in such cases it will be harder to adjust the crown.

Dr. D. M. Cattell, of Chicago, read a paper,

Operative Technics.

The name "Operative Technics" is understood as the title of a department recently added to the curriculum of a few dental schools.

The technic department has for its aim four cardinal points:

1st. Manual training or handicraft.

2d. System.—Each step following the other in methodical order.

3d. A greater familiarity with teeth.—Outward forms, inner channels, structure and plan of development.

4th. Individual reasoning.—Teaching students how to think for themselves.

The present course as given in the Northwestern University Dental School is divided as follows:

1st. A study of technical terms, a hundred or more words with which the student will come in contact all through the lecture courses and text-book reading. These words, when thoroughly understood, become the key by which students can often unlock and open to themselves the meaning of many otherwise obscure sentences.

2d. A study of typical tooth-forms, including their several surfaces and surface markings; noting certain "landmarks" peculiar to each denomination of teeth, also malformations. In this lesson each student has the work of Prof. Black, on the teeth, as a text book.

After going carefully over the several surfaces and noting their lobes, developmental lines, sulci, and other suface-markings, each student is then invited to select a tooth similar to the one undergoing inspection, from a miscellaneous lot of extracted teeth.

3d. A study of pulp-chambers and canals, omitting some detail—with selected files the student cuts away the tooth so as to expose the pulp-chamber and canal throughout its entire length; the cutting continuing until the central portion of the chamber is reached. He then "inks" the exposed cut surface of the tooth and presses it down upon a slip of selected paper, and the result is the so-called "silhouette pictures," showing the pulp-chambers and canals. Of each tooth so dissected the student makes a line containing no less than five pictures. And of each denomination of teeth there should be several aspects of the chamber. The silhouette pictures of each denomination are printed on separate pages of a specially-ruled blank book, and constitute when done a text-book, if you please, on the subject, that the student may keep for ready reference.

4th. The physical, anatomical, chemical, and microscopical divisions of tooth-structure. These studies are prepared by the means of lectures and charts, and when possible, having students make both longitudinal and cross sections, studying them through the microscope. A special study of enamel in reference to cavity margins is made. The idea is to impress upon the student's mind the need of greater care in preparing enamel-margins of cavities preparatory to filling.

5th. Free-hand drawing and modeling. The drawing of the different surfaces of the teeth by students helps to train the hand, as well as to call closer attention to form and certain surface markings. Modeling teeth in clay or its equivalent is excellent training for both hand and eye, and should be indulged in as much as time will permit. The models should average at least six inches in length.

6th. A study of the more common medicaments such as are found generally in dental offices. This is not intended to supplant the systematic work of the chair of materia medica and therapeutics, but is preliminary to it. These remedies are classified as disinfectants, antiseptics, anodynes or obtunders, stimulants, counter-irritants, etc. Each student has in his case some eight or ten bottles, supplied with certain medicines for his experiments while in the class. These drugs are to be handled, looked at, smelled, tasted, indeed gotten thoroughly acquainted with.

7th. Students select from a miscellaneous lot of teeth placed before them, a set, many of which should contain cavities ranging from simple exposure of dentine to large cavities involving pulp-chambers. These teeth are to be properly arranged as to original position, and their roots imbedded in gutta-percha. This set of teeth, so arranged, is to be considered a *dummy patient* for the student to practice upon.

8th. Pulp-capping and devitalization. With the "dummy" before him representing a supposed patient, the student seeks for slight pulp-exposures, having listened to a lecture on the subject regarding the diagnosis, prognosis, treatment, and final capping or devitalization. As each pathological case is presented, the student applies the remedies supplied in his case-bottles as directed by the instructor; after due treatment the supposed exposed pulp is capped or devitalized according to the specific directions of the instructor in charge.

9th. Supposed cases of dying pulps, putrescing pulps, and entirely decomposed pulps. From the medicines furnished him, each student applies treatments to the different conditions suggested, until he becomes familiar with the class of remedies required in each pathological condition.

10th. A study of the pathology and therapeutics of alveolar abscesses—blind or sleeping, acute, chronic, fistulous. Also, of ulcers, pulpitis, pericementitis, etc. This is done by lectures and charts; students making applications to supposed lesions from their medicaments.

11th. Cleansing, drying, and filling root-canals is practiced until students become quite familiar with the different methods of procedure; giving preference always to the one considered the best.

12th. Bleaching teeth. This study is made by the way of lectures and experiments in test-tubes or beakers upon vegetable matter. so that the results are soon observed by the students. Also practical application to discolored teeth found in the miscellaneous lot.

13th. Instruments. Each student supplies himself with a set of instruments and certain appliances according to a list furnished him. They are also furnished brass wire of a certain size, from which they are to make models of those called for by the list.

14th. Preparing cavities. Students are instructed regarding the opening up of cavities, and the proper shape they should assume. The simpler forms only are studied here,—beveling of enameled margins, etc.

15th. Filling materials. Students practice filling these cavities with the different classes of filling materials,—gutta-percha and the different preparations of the same, cements—both phosphates and chlorids, amalgams—alloys, and copper, tin, aluminum, gold, non-cohesive and cohesive, and combinations of two or more. These filling-materials are *studied*. Many of the cements and amalgams are made before the class.

One essential condition of the course is, that nothing must be taught here that is not in accordance with the teachings of other special chairs; nothing taught that must be untaught by succeeding instructors; hence the technic teacher should be familiar with the methods advocated by the other professors of the institution with which he is connected.

Now, if by means of this course of instruction students can be benefitted manually and mentally in a manner which is unattained by other known methods or systems of teaching, this effort will not have been in vain.

If the student has gained in handicraft, systematized his daily course of procedure, become more intimately acquainted with the organs on which his future labors will be bestowed, has learned the art of thinking for himself, and become logical in his reasoning, he is then ready to pass into the clinical department, and there add practical knowledge to the hints he has thus far received.

Dr. Geo. V. I. Brown, Duluth, Minn., read a paper entitled,

PRUDENCE AND GUTTA-PERCHA IN CROWN- AND BRIDGE-WORK.

He said, My desire is to avoid, so far as possible, the detail mechanical construction, and deal with the broad underlying principles that govern the attachment of a foreign substance to a root in the living mouth, as a substitute for nature's perfect crown work, and the yoking of one tooth to another to support substitutes, and calling upon them to perform duties belonging to the full number.

Experience has certainly given this class of work an unquestioned right to be considered among the useful and therefore reputable operations in the oral cavity; and the query naturally arises, "What has been the effect of this introduction upon the general practice of dentistry?" and a glance at the record seems to prove that the result has been a marked one both for good and for ill.

The benefits have been the preservation and restoration to a state of usefulness of many roots and broken-down crowns of teeth that would otherwise have been lost, thus putting off the the evil day when artificial dentures would be necessary.

Again, the result of this effort to utilize such roots have more than anything else influenced the wonderful advance in the therapeutic methods by which they are restored to healthful usefulness, and diseased conditions removed.

An advance has been made, in that while the average dentist was almost totally ignorant of metal plate-work, to-day every student is required to have sufficient skill in this direction to be able at least to make an artistic-looking gold crown. On the other hand, instead of acquiring greater perfection in filling, the temptation has led to the wholesale destruction of natural crowns that might properly have been filled.

The principal points in crown-work are;

First. Attachment to secure without fear of dislodgment.

Second. Natural appearance if for the anterior teeth.

Third. Provision against the action of destructive agents at or near the gingival line.

Fourth. Secured against danger of splitting by a band, or its equivalent, by forming the joining surfaces of root and crown upon approximal and occluding surfaces.

He said, I begin with the broad-sounding but quite true statement, that crowns inserted with any of the oxychlorid or oxyphosphate cements, without band or other protection at the joining with the root, no matter how secure the pin may be, must be considered as of a temporary nature, for no matter how perfectly the surfaces may be adjusted, disintegration will surely follow, and not only cause loosening of the crown but allow more or less destructive action upon the root itself.

The use of amalgam as a setting is, of course, a great improvement upon cement in crowns of this class, but even amalgam is not always proof against bacterial influences at that critical point, the gingival line, as shown by the frequent failure of fillings.

The teachings of Dr. Flagg and his followers, while perhaps going farther than could be generally recommended, have at least been instrumental in establishing the value of gutta-percha in its capacity to withstand the action of the acids of the mouth, and as a preservative agent against caries even where every other filling-material would fail; its only disadvantage being that it wears away too readily in exposed positions; but while its good properties are of the first importance in crown work, the softness does no harm, because it is protected from wear and will not isintegrate. The advantage may be summed up before proceeding to more detailed description under the following heads:

First. It is impervious to acid secretions or bacterial influences.

Second. Not irritating to surrounding tissues.

Third. Easily removed when necessary.

As against these three there is simply one consideration, viz: the difficulty of adjustment.

To one accustomed to use cement for this purpose, the difficulty of applying gutta-percha as a substitute seems almost insurmountable; but a moments recollection of the trials attendant upon the setting of his first crowns will recall the fact that cement too, had its difficulties for the beginner.

For gold crowns, where teeth are covered entirely, I prefer the red gutta-percha we get in form of sheets. It has a degree of toughness that is valuable, but for anterior crowns with open faces the red line at the edge of the openings is undesirable, and I therefore use some white preparation that softens at a low temperature, as this property greatly facilitates its handling in the mouth. There being no danger to apprehend from wear, hardness is not so desirable as for filling.

It is my method to heat both crowns and setting-material upon a tray to protect from the open flame, spread with warm instruments a thin coating over the inner surface of the crown, which should be first roughened on the inside by scratching with an instrument, aiming to have nearly the exact amount necessary as possible, but depending upon a vent to get rid of a small amount of surplus; then after drying the surface of the teeth with alcohol and warm-air blast, wipe with some suitable germicide, saturate a pledget of cotton in eucalyptus, coat the surface with it to prevent the too rapid drying of the chloro-percha, of which a thick solution is then applied around the neck, so that when the crowns already heated as hot as they can be handled in the fingers, and prepared as described are driven home, the eucalyptus, chloro-percha, and gutta-percha in the crowns will form a thick creamy mass that will penetrate and perfectly fill every space about the necks, and even if surplus be not removed afterward, will not cause irritation as might a particle of cement in the same position.

Sometimes too much gutta-percha will prevent the crown going quite into the proper position, just as sometimes happens with cement; but the remedy is much simpler, because easily removed while still warm; or if, for accidental or other causes, removal be desired afterward, hot water or hot air applied will in a short time heat the metal sufficiently to soften the material and facilitate the separation without the necessity of damaging the crown, and anyone who has tried to pull them off without first warming will be quite satisfied that any properly adjusted crown can be securely held in this manner.

ERRATA.—On page 583, in formula No. 2, the proportion of common salt should be .02. On page 587 add oil cloves, two drachms, to cocain pigment formula.

ALL SORTS.

Humby (Dr.) On a Useful Device.—He said: Many times in using oxyphosphate there was difficulty in letting go the patient's mouth to mix the filling. He had found such a contrivance as he now showed very useful in overcoming this difficulty. It consisted of a glass bottle with a large mouth, the stopper of which consisted of a glass bulb and tube, the powder being in the bulb of the stopper instead of in the bottle, and the bulb being open at the top and covered over with india-rubber, so that by pressure of the rubber the desired quantity of powder was forced through the tube. A similar arrangement contained the liquid, so that the whole operation of mixing the phosphate could be easily conducted with one hand.—*Extract Brit. Jour.*

Tuller (**R. B.**) **on Combination Cement and Gold Filling.**—In finishing cement with gold I generally take or make a hollow cylinder of gold, pressing together one end, making, in fact, a cup. This pressed into the cement while yet soft, prevents the moist cement from coming into the center, and the hollow is just what you want for the next piece of gold when the cement is hard enough to add it.—*Extract Items.*

Thomas (**Dr.**) **on Detecting Pulp-stones.**—How can pulp-stones be detected, and what is the cause of the trouble? You cannot advise the extraction of a tooth if you can find nothing about it to give trouble; but there is one thing I have used in my practice to satisfy my own mind, and that is, if you will take the finger-nail and scratch, producing a vibrating sensation, it will produce pain in the tooth, or use an excavator to scratch with, and there be irritation by pulp-stones it will respond to the vibration produced on the outside of the tooth.—*Extract International.*

Talbot (**H. P.**) **on The Difference between Peroxide of Sodium and Peroxide of Hydrogen.**—Sodium hydrate is a caustic alkali, and those solutions of peroxide which you make from it would be more or less caustic, whereas the hydrogen solutions would be acid. You will also find directions on the can to avoid grinding it. The peroxide of sodium is a substance which will liberate oxygen very rapidly, and if there is, by chance, organic matter present, the result may be something similar to that obtained when potassium chlorate and sulphur are ground together; the peroxide might give up its oxygen so rapidly as to cause a serious explosion.—*Extract Inter.*

Gramm (**Dr.**) **on The Use of Mat Gold.**—I use S. S. White's crystal mat gold almost to exclusion. Exception to the above is made in contour fillings in which work "mat gold" is used approximately to the walls of the cavity, while in the centre it is alternated with Pack's cylinders, annealed to considerable cohesiveness. The above mat gold possesses the admirable quality of being remarkable soft and adaptable, and yet cohesive to an exceeding degree. In its manipulation I use hand pressure only; gentle compression at first, followed by condensation with small round headed burnishers.

"The solidity and adaptation of a filling condensed in this manner

I have by a series of experiments, found to be superior to that condensed by mallets of any description.—*Extract Review.*

Burkhart (A. P.), a Case in Practice.—The patient came to him with a lateral incisor which had been troubling her for two or three years. Upon examination he found the root with a large opening through it. He sealed this up with gutta-percha, and treated the fistula with hydrogen peroxid. The result not being satisfactory, he removed the gutta-percha and filled the canal with orange-wood. He thought that the gutta-percha perhaps extended past the foramen of the root, while the orange-wood was carefully cut to the length. The after-treatment consisted in applying carbolic acid and glycerin to the fistulous opening, with the result of a cure in two or three weeks.—*Extract Cosmos.*

Gaskill (Dr.) on Absorptive Power of the Pulp.—I would mention the case of a young man whom I treated about two years ago, which illustrates the absorptive power of the pulp. There was a small pink spot on the face of the central incisor, but no cavity, or pain to indicate irritation. I saw the case frequently, and in about six weeks after the first visit he expressed himself to the effect that the bottom had broken out of the tooth. On examination it was found that the palatine wall had crushed in completely from mastication. After taking out the small laminæ of enamel which still remained, I found that absorption had gone on exposing the pulp; the canal and apical foramen were also quite large. On the labial side of the pulp-chamber absorption had advanced so far as to allow me to see the outline of an instrument through the enamel.—*Extract International*

Hints on Arranging Artificial Teeth.—Much of the artificial appearance of artificial teeth can be avoided by making them a little irregular and careless looking. Few natural teeth look as regular and and precise and stiff as we make an artificial set. And they should not be very small and pretty, and "pearly white." Make them look natural; and nearly every thing in nature is irregular in its harmony. In learning landscape drawing when a boy, we were continually measureing with a rule and seeing how precise we could make every line. Our teacher would come along and "spoil" our studied effort by taking our pencil and dashing here and there with all manner of crooked and waving strokes and dots, fairly covering up our straight lines with irregularity everywhere. And he didn't seem to spoil our picture.—*Items.*

Mercuric Chloride.—Mercuric chloride forms an insoluble albuminate of mercury in contact with the albuminous matter of wounds, To prevent this, Dr. Laplace, as far back as 1887, advised the use of tartaric acid in combination with corrosive sublimate. Drs. Lúbert and Schneider, however, found that the acid caused irritation, and that an alkaline chloride accomplished the desired result better. The formula recommended by them is:

Mercuric chloride	3	parts.
Sodium chloride	100	“
Distilled water	600	“
Glycerin	100	“
Rectified spirit	200	“

Dissolve the sodium chloride in water; filter, add the sublimate, add when dissolved the glycerin and spirit.

Dressings will commonly hold 1½ times their own weight of this solution.

Evans (Geo.) on Treatment of Pulpless Teeth.—In brief, my conclusions are that in cases of pulpless teeth, where an aseptic condition of root-canals and dentine exists and immediate root-filling is to be practiced, the use of coagulants, such of carbolic acid or creosote, alone or in combination with other suitable agents, is permissible, but when sepsis exists their use is contraindicated in favor of non-coagulants; that treatment with such agents should be followed and the filling of the root be temporarily deferred; that if alveolar abscess exist, treatment through the apical foramen by injection should be restricted to the use of non-coagulants, until disinfection of the dentine is effected.

There is such a thing as over-treatment,—an unnecessarily frequent renewal of antiseptic dressing in root-canals, thereby aggravating or producing irritation of the pericementum at the apex of the root. Such cases may be relieved by washing out the canal with alcohol and applying the alcohol on the dressing, instead of the agents previously employed.—*Extract Cosmos.*

Smith (W. W.) on a Case of Paralysis Cured by Lancing the Gums.—Patient a little girl, twenty months of age. The little one showed fever and diarrhœa, which the mother thought came from the teeth. A physician being called in, prescribed for the fever and for the diarrhœa. After two days the child became paralyzed in the left leg and suffered with an inactivity of the kidneys, for which nitre was prescribed, with beneficial effect, which, however, lasted only two days. When Dr, Smith examined the case, he found none of the teeth had erupted, and reported the fact to the physician, who said he could not see any possible connection between that fact and the disease of the child. Another physician being called in, thought the condition might be due to the teeth. Dr. Smith found a report of a case somewhat like it in the "American System of Dentistry," and so requested the privilege of lancing the gums, which being granted, he made a deep incision over the cuspids on the right side. The second day afterward the child could stand on its foot, and the third day could walk, and now there is nothing apparently wrong, except a slight numbness in the foot.—*Extract Cosmos.*

Reeve (N.), Hints on Making a Partial Plate With Bands.—There is one other little point I should like just to mention, it is in connection with those very awkward cases in the upper jaw where the six front teeth alone remain standing all close together. Suction is generally difficult to obtain, so it becomes necessary to make a gold plate with bands round the front of the canines. The patient very naturally complains of their showing. A good way to get over the difficulty is to cover the band if broad with white rubber, or if narrow and near the gum, with pink. The band should be nicked with a very fine saw along both borders, the cuts being made close together and not more than a 1-32nd of an inch deep. The rest of the surface being barbed with a sharp pointed graver, in alternate directions, paint over the band with chloro-rubber and press a fragment of warmed rubber well down over this, flask and vulcanize.

Should it be afterwards necessary to tighten the band, gently warm it before doing so.—*Ext. Brit. Jour.*

Bentley (C. E.) on Pyrozone as a Bleachar of Discolored Teeth.—I have been using pyrozone as a bleacher of teeth, not with the atomizer as recommended by Dr. Rhein, but with an instrument that has a rubber cylinder and copper bulb, and a point extending from the bulb. By heating the copper bulb it will expand the medicine in the rubber cylinder, causing a very fine spray to come from the needle. It occurred to me recently after using pyrozone, that it would be a useful instrument to drive the molecules of pyrozone into the tubuli, thereby bleaching the compounds that are in these small canals. I have used pyrozone for bleaching teeth with this instrument as many as four times since the Congress, and I have been surprised with my results. I bleached a tooth to-day more as an experiment than anything else. After adjusting the dam and scraping away the decalcified dentine, I used pyrozone for at least twenty minutes, and to my astonishment, and to the satisfaction of the patient, it bleached it successfully for the time. I filled the tooth for the time being with cement, awaiting results.—*Extract Review.*

Reeve (N.) on a Method of Obtaining Even Plates.—The ordinary way of bending up wax by warming and pressing it on to the model with the thumb is open to the objection that the thumb being harder and more unyielding than the soft wax tends to press it very thin over the rugæ, and not at all into the interstices of the teeth. This may be avoided and the rugæ brought prominently and evenly on the surface, by heating some modelling composition in water, rendering the wax pliable by dipping it for an instant in the water with the composition, then placing the wax roughly in position on the model and with the soft composition knead it well down into place; on parting the composition from the wax, the latter will be found to represent on the surface almost a duplicate of the surface of the model.

The composition has of course a tendency to stick to the wax, if too hot. Should this give trouble, dry the composition first, and smear the surface of it with a little French chalk. In subsequently setting up the teeth and preparing for the flask, care should be taken that the surface of the wax is not cut or scratched; when finally ready for the flask the surface of the wax should be polished by lightly rubbing it with the finger tip or cotton wool.—*Extract Brit. Jour.*

Sparks (R. E.) to Re-swage a Metal Plate Having Teeth On. —The adage, "Necessity is the mother of invention," proved itself true in my practice recently.

I made a gold plate for a patient. It carried one central incisor and the bicuspids and molars. It seemed to come out of the investment beautifully, but when I went to fit it in, I found it raised up from the palate badly. I determined to try an experiment. I placed the plate upon the die, removed it and marked the die around, about where the palatal side of the artificial teeth would stand. I then cut away the metal where any of the teeth would be likely to touch the die. I then built up a ring of putty outside of where I had marked the die. I ran a lead counter in my putty ring. I replaced the plate upon the die and formed the counter to fit the palate without touching the teeth. A few blows with a hammer upon the lead, while an assistant held the plate firmly on the die, brought it into very good shape.

Another case:—A gentleman who wore, for some months, a well-fitting gold plate, carrying a lateral incisor and some teeth on each side, returned with it so flattened that the palate would not touch the roof of his mouth. I applied the same treatment which, he said, made it fit better than it ever did before.—*Dom. D. Jour.*

Argenti Nitras as an Obtunder for Sensitive Dentine.—If a pine stick, or cotton on drill-head is to be used to convey the material, it must be reduced to powder by scraping, or to a state of fine granules by crushing, then moisten the point of stick or cotton on drill with water, so as to hold the powder or granules and convey to parts affected and rub over surface, or hold firmly for a few seconds, three, five or ten, as respective cases may require. Creosote can best be applied in the same way. Be careful never to take an excess of material on either, lest soft tissues should suffer. Have no fear of discoloring teeth with nitrate of silver. The discoloration produced, if objectionable, can be easily removed by an application of iodide potassium manipulated with soft pine or orange wood stick and pumice. If let alone it will wear off or pass away in a reasonably short while. After a free use of the stick and pumice, or silex, to effect a smooth polished surface of affected parts, having been cut or scraped with chisels, use suitably shaped burnishers with considerable force (as recommended by Dr. John Hall) and rapidity until perceptible heat is produced. In a large majority of cases so treated the result is satisfactory and no repetition of treatment necessary. —*Extract Southern Journal.*

Trueman (W. H.) on a Retaining Appliance.—He spoke of a splint which he had constructed to retain the three front teeth which had been accidentally knocked out, that he had made of base plate gutta percha. After the teeth were inserted the gutta percha was softened and a strip laid over their labial faces, the teeth being supported by the finger on their palatal surfaces. When this hardened a similar strip was laid over the palatal surfaces. Holes were made through these plates with a hot instrument and the two plates united by ligatures passed through these holes at the necks of the teeth and tied with the knot suggested by the late Prof. Barker. This being done, the gutta percha was wiped dry and coated with a film of the oil of cajuput, when another strip was softened and laid over the knots. This presented a smooth surface to the lips, which would have been irritated by the knots. The splint worked very nicely and was worn with little discomfort by the patient, and the replaced teeth were held securely in place until a perfect union was established.—*Extract Office and Laboratory.*

Brophy (T. W.) on The Use of Pluggers.—If a gentleman is going to make use of non-cohesive gold, he is not likely to make use of a broad foot-shaped plugger. He should use a wedge-shaped plugger to carry the gold towards the wall of the cavity. And if he is going to use cohesive gold, he can obtain the best results by the use of a fine serrated, broad plugger, in proportion to the size of the cavity. If a dentist is going to fill a large cavity, his plugger ought to be correspondingly large; if he wants to fill a small cavity, his plugger ought to be suitable for for such a cavity, and his instruments should be selected in some general forms and various sizes of those forms. By doing this he will be able to accomplish that which he desires, much more rapidly and satisfactorily and skilfully than he can by using pluggers made without any special reference to their size and form. It is painful to see a good operator take a little fine pointed plugger and plug away, using cohesive gold, and taking an hour and a half to do what he ought to accomplish in half an hour if he uses proper instruments and proper gold, and pluggers of the proper size.—*Extract Review*

Cruttenden (H. L.) on Some Good Suggestions.—Don't advise crown or bridge work unless there is a fair chance of their proving a success, for one failure will count against you more than one hundred successful cases.

Don't let the glimmer of the gold dollars blind you, but have courage to say no, when an uncertain case is offered.

Don't crown a tooth when it can be filled with a good prospect of saving it permanently.

Don't place a piece of bridge work before the parts are properly prepared, all roots removed that are not to be needed for anchorage, and the jaw sufficiently healed.

Don't attempt to fit a band unless the root or tooth has been properly shaped, all overhanging enamel removed, the walls ground to permit a band to fit nicely to the root without overhanging and irritating parts under the gum.

Don't permit the band to set too far under the gums, also do not let any part of the crown or root be uncovered.

Don't set a crown unless you have good anchorage by tooth crown, pins, posts, or screws.

Don't attempt to make a bridge without having two or more good roots or teeth to anchor to. No bridge can stand unless it has good abutments.

Don't anchor a bridge by bands or half-crowns.—*Extract Review.*

An Interesting Case.—A young lady, about seventeen years of age, called for treatment. She was suffering from severe pain in the region of the right superior lateral incisor. In her own words, "suffering from neuralgia in the front teeth on the right side," and wished the lateral incisor extracted, as it was loose and had caused her trouble enough, etc. Upon examination we found the teeth in remarkably good condition for a girl of this age, excepting the tooth mentioned, it being slightly loosened; we also found a slight bluish line running through the gum over the root of this tooth and part way across the adjoining central incisor. Upon inquiry as to her ever having received a blow or a fall injuring these parts, we learned from her mother that about five years previous to her visit she fell, striking the parts upon the point of a lead-pencil, but both the girl and her mother, in response to our questions, felt sure that the pencil was all drawn out at the time. However, after some persuasion, the patient allowed us to make an incision and explore the parts.

We found the lower border of the process absorbed over the root of the lateral incisor, and a small piece of the pencil lying directly over the root; also another piece, possibly a quarter of an inch in length, that had been forced endwise between the central and lateral incisors. It was so tightly embedded that we did not remove it in one piece, but found it was necessary to dissect it out, a small piece at a time. The wound was then dressed and the patient dismissed. She was not heard from for several weeks, when the report was made that "the loose tooth had grown tight and the neuralgia had disappeared."—*International.*

Shields (N. T.) on A Method of Painless Devitalization of Tooth Pulp.—When it is necessary to destroy the pulp, instead of making an application directly upon the pulp itself, I apply the arsenious acid indirectly. Make the application of arsenious acid upon a spot of freshly exposed tooth-structure, and hermetically seal with gutta-percha, make an application of cocain to the part of the tooth where the exposure is, and the patient will leave the office perfectly comfortable, and the pulp will die without the patient being conscious that the thing is being done. Leave the application one week, and at the expiration of that time you are able to take a sharp bur and go farther into the dentine, almost to the pulp itself, without one particle of pain; then make a fresh application of arsenious acid, and hermetically seal it up with gutta-percha, and leave it for another week and the pulp will be perfectly dead, without the slightest inconvenience to the patient, save about the tenth day it will be abnormally sensitive to heat and cold. If the patient takes hot water or hot coffee, and it creates tooth-ache, the way to avoid it is not to allow the hot coffee to touch the tooth. Tell the patient to look for this sensitiveness two or three days after the second application. At the first symptoms of sensitiveness the patient will avoid hot drinks; and if he does take hot soup or hot coffee, the toothache so brought about can be readily relieved by the application of cold water.

By applying the arsenious acid in this way not a particle of it comes in contact with the pulp itself, and hence there is no soreness caused at the end of the root by the acid being absorbed through the foramen. At the expiration of the second week the tooth is ready for the operation of removing the pulp and filling. I always open these teeth with large burs.—*Extract Cosmos.*

Deaths from Nitrous Oxide Gas.—The commission appointed by the London *Lancet* to investigate the results of the administration of anesthetics from a clinical standpoint, report that some thirteen cases of death have been recorded from the use of nitrous oxide gas, and it is very doubtful whether these fatalities can all be ascribed to the influence of this anesthetic. The youngest patient was 10 and the oldest 71. Most deaths have taken place in private practice, and records have come from Canada, France, England, Scotland, and the United States.

The pulse is stated to have failed before respiration in one case and once simultaneously with it.

In all cases the operation was for the extraction of teeth or stumps, and in three instances the operation had not been commenced at the time of administration.

Intemperance is stated in one case to have been a possible adjuvant cause; in another the patient was dying from cancer; in a third the case was complicated by vomiting.

The causes of death, as assigned by the reporters, were as follows: asphyxia; fright, the patient not being under the influence of the gas at all; congestion of the lungs, which was noticed two hours after the administration, and eventually proved fatal; the last stage of phthisis; respiratory failure through impaction (1) of a broken gag in larynx, (2) of a molar tooth in larynx; syncope (simple) in three cases, from incomplete anesthesia and shock of tooth drawing, and from tight lacing forcing the heart out of position by the distended stomach.

Requa (L.) on Destroying Pulps with Arsenic.—With a large spoon-excavator the carious matter is removed as far as possible, without cutting into the chamber. If there is a tough, leathery skin surrounding and partially covering the pulp, it is left intact. The cavity is then bathed with oil of cinnamon, and the pulp is ready for death.

Next, from a piece of good tough spunk is cut a thin disk that will cover about one-half of the floor of the cavity. This is moistened with carbolic acid, and the smallest possible quantity of Squibb's arsenious acid is worked or pricked into one side of the spunk. This is then placed death side down on a glass slab, and dried with bibulous paper.

The cavity is made ready in the usual way and the disk of spunk applied directly to the pulp. The cavity is then dried with hot air and sealed with gutta-percha. In sealing, a small piece of gutta-percha is warmed in the flame and mashed thin between the thumb and finger. This is placed on a curved spatula and drawn across the cavity, thoroughly sealing it without pressure.

The point which I wish to impress is this: The arsenic being worked into the little disk of spunk does not give the exciting effect or shock to the sensory nerves that it would were it placed there in a mass, full strength.

The absorption takes place more gradually, and before much pain is felt paralysis begins, and by this time the full power of the drug is at work.

Different writers vary as to the time occupied for the complete destruction of the pulp, some holding that twenty-four hours is sufficient, others forty-eight hours, one even recommending repeated applications extending over a period of five or six days. My own experience has taught me that twenty-four hours is quite long enough to leave an application of arsenic in a tooth. Then the pulp can be extirpated before the stage of paralysis has passed off. In the majority of cases, when the arsenic has been left for two or more days, a soreness of the tooth is complained of, and a marked congestion of the peridental membrane will be found.

In the anterior teeth, where conditions were favorable, I have had the best success from applying arsenic in the morning and cleaning out the canal and filling in the afternoon.—*Extract Cosmos.*

Rymer (J. F.) on Dental Neuralgia due to Reflex Causes.—We, as dentists, have to diagnose pain due to irritation of fifth pair of nerves, often from very remote reflex causes, but ordinarily dental pain is purely local. It may be well to say a few words about dental neuralgia dua to reflex causes. Firstly, young people of both sexes, about arriving at the age of puberty, frequently suffer from a general derangement of the nervous system, and from some cause or another the pain is usually transmitted to the fifth pair of nerves, which produces extreme dental neuralgia, independent of any dental caries, and on inspecting the mouth we see general congestion of the gums, and in extreme cases the pericementum or periosteum of the teeth becomes involved, caused by the sympathetic nerves not acting properly. The treatment in these cases of severe neuralgia naturally belongs to the physician, as nerve and blood tonics are here indicated; local applications doing little or no good. The class of cases which I am now speaking about have been sent to us by the medical men, as they hear from their history that they are suffering from toothache, for medical men, as a rule, do not examine their patients' mouths, any more than we would examine our patients' eyes when they come to us to have a tooth removed. It is our duty, then, to diagnose the case, and send the patient back to the doctor with a letter giving the diagnosis.

There are numerous other reflex causes in which we are called upon to give our opinions as they give rise to dental irritation or neuralgia. The most important are as follows: (*a*) Pregnancy; (*b*) the menstrual periods; (*c*) diseased condition of the uterus and ovaries; and (*d*) rarely, diseases of the breast. From my own experience, so far, I have found that dental neuralgia due to reflex causes is chiefly confined to the female sex. Why, I am unable to answer. Catarrh or colds also give rise to dental neuralgia. These cases are mostly local, but occasionally reflex. We all have suffered from a severe cold, I expect, and we know that when the mucous membrane generally becomes inflamed and sore, and in severe cases this inflammation extends to the membrane lining the teeth, which causes a general inflammation, and so pain or neuralgia. This can be alleviated by means of astringents, etc., and the dentist can often materially assist the medical man with his local applications in effecting a cure so far as pain is concerned.—*Jour. Brit. Asso.*

Andrews (R. R.) on Prehistoric Dentistry.—At the Peabody Museum, at Cambridge, there is a collection of archæological treasures, recently found in Central America, that have especial interest to the dental profession. These, consisting of crania, parts of the skeleton, a collection of teeth curiously filed and inlaid, with a fine collection of pottery and instruments which were made from bone, stone, and from a volcanic glass, obsidian, together with carvings and statues, are soon to be on public exhibition. The teeth that were found at Copan, are perhaps more interesting than the skull. Many of these have small circular pieces of green jade inlaid in a cavity that has been drilled by a stone or glass instrument in the face of the incisors and cuspids. These inlays are a little more than an eighth of an inch in diameter, the outer surface is rounded and brightly polished, and as perfectly fitted as it could be by the most skilled operator of to-day, with all the modern instruments at his command. In a few of the teeth the inlays have loosened so that it can be taken out, and there appears to be a white substance, perhaps a cement, between the inlay and the tooth, used to hold the inlay in place. It would seem that this inlay might be some mark of distinction, perhaps used in the mouth of a chief or head man of the people. Some of these teeth are filed and have no inlay. Some are inlaid and not filed. And some are both filed and inlaid. Quite a number of the teeth are badly decayed. Much of this decay appears to be at the cervical border, and in no case does there appear to be any filling of any kind used to stop decay. None of them were filled for prophylactic purposes. In the teeth from skeleton 8, mound 36, found at Copan, two of the teeth that may have formerly had an inlay were partially filled with something that seemed like a red substance. None of these from this skeleton were filed, but in the lower jaw of the skeleton was found the most interesting curiosity in the whole collection to dentists—a lower, left, lateral incisor that has been carved from some dark stone, and which has been implanted to take the place of one that had been lost. The tartar upon it would seem to show that it had been worn for some time during life. This implantation antedates Dr. Younger's experiments by about fifteen hundred years. Many of the teeth were so completely covered with tartar as to form masses nearly double their original size, and in one case an upper molar had the tartar deposited in such a way, and to such a degree, that it formed a shape that articulated on the gum of the lower jaw where the teeth had previously been lost. In one case, at least, the drilling of the tooth to produce a cavity in which to fit the inlay, had encroached upon the pulp, and there is distinct evidence of recalcification of pulp tissue at this point.

The whole collection is one of much interest, perhaps the most interesting evidence of prehistoric dental work that is to be found in any museum, and it is well worth a visit to Cambridge to see.—*Extract International.*

Lennox (R. P.) and Jones (A.) on All-Gold Crowns, using Fusible Metal.—The following is a description of the demonstration given by Messrs. Jones and Lennox, at the recent annual meeting, of a method of making an all-gold crown with the aid of fusible metal.

The method is fully described in order that those who may wish to try it may do so with as little difficulty as possible. Messrs. Ash and Sons now supply the appliances referred to in the course of the description.

The tooth operated upon was a devitalised left upper first bicuspid. The crown, of which a great part was still standing, was sawn off within about a sixteenth of an inch of the gum by means of a saw cutting at right angles to the plane of the frame. The root was then stripped of enamel by means of a set of trimmers to render it cylindrical. A thin strip of copper in the form of a portion of a flat ring was formed into a ferrule, with plane edges and a flaring top, by placing the strip about the root, grasping the ends with a pair of pliers, and drawing them together until the lower edge, which alone came into contact with the root, took accurately the form of the latter a little under the gum margin. The ferrule was then soldered, replaced on the tooth, lightly filled with wax when so placed, and an impression was taken in King's composition. An impression of the lower was also taken. The impression of the upper being removed from the mouth, the ferrule was completely filled with wax. Half an ordinary brass pin was thrust head downwards into the the wax towards the buccal side of the ferrule, and models were cast in plaster. Next, the ferrule being in position on the model, the wax was removed by scalding, the pin was temporarily withdrawn from the cast, and a small depression was cut in the plaster within the ferrule towards its lingual side by means of a spade-shaped excavator. The pin being replaced, a mandrel was made by pouring fusible metal into the ferrule, and applying a slight pressure to it with the finger as the metal cooled. The copper ring and the mandrel were removed from the model, and, the ring being cut through on the lingual side and peeled off the mandrel, the latter was trimmed up and made cylindrical to make it easy of removal from the finished crown.

The next step was the striking up of a gold crown by the aid of a natural tooth of a suitable size, set in fusible metal, and carried in a steel punch. A piece of sheet gold (No. 36) was wetted and placed upon a lump of bees-wax (weighing between three and four pounds), and driven into it by a few blows of a hammer upon the die selected, the gold being annealed three times in the process. The crown thus obtained was chased upon the natural tooth with a steel punch and hammer, trimmed round with shears, and the edge made plane by filing and rubbing on a wet slate. The mandrel was next made up with wax to a height calculated to give a suitable occlusion, and placed in position on the model. The crown was heated and placed on top of the mandrel, and the proper occlusion obtained by articulating the models. Wax was then put round the mandrel to the shape of the desired gold ferrule, and trimmed so as to just clear the edge of the crown, and to leave the lower edge of the mandrel itself absolutely clear. A strip of gutta-percha was wrapped round the mandrel, and the length so cut that the edge of the gutta-percha was in contact with the edge of the crown at all points, care being taken that the meeting edges of the percha were on the lingual side of the mandrel. The gutta-percha ferrule thus obtained was deeper than the mandrel, and the superfluous portion, indicated by marking the inside of the ferrule with a bent Donaldson's bristle drawn round close to the edge of the mandrel, was cut away after the removal of the ferrule. The form of the strip of percha thus obtained being then scratched upon a sheet of gold, a gold strip was obtained of the exact form required for making the gold ferrule. This gold strip was then finally adjusted to the mandrel and soldered into a ferrule, the crown edge of which was made plane by filing and rubbing on a wet slate, as was before done with the crown, and the other edge was filed to the form of the mandrel. The crown and the gold ferrule were then annealed and boiled in pickle, fitted together, held in position with a piece of bent wire, soldered, and the crown was complete. The crown was then boiled and finished in the usual way. Lastly, the crown having been applied to the root and found to fit, a copper post was screwed into the root, and the crown, filled with phosphate cement, was pushed into position, the superfluous cement was removed, and the work was done.—*Jour. British Dental Asso.*

CORRESPONDENCE.

A LETTER FROM CALIFORNIA.

Enclosed, please find $2 00, to pay for Journal. Although I have not been in the practice of dentistry any since leaving Detroit in 1886, I have not ceased to be interested in the Journal and all the good boys who contribute to its pages, many of whom it has been my pleasure to have known personally, but I want to tell you that I am *particularly interested* in the November number now before me, and especially that part of the report of the "World's Columbian Dental Congress," which appears on page 532, under the head of "Operative Dentistry," where so many of the bright lights of the profession, who, like myself, have passed the meridian of life, pay such a high tribute to the merits of *tin foil* for the saving of disintegrated tooth structure. If I ever had a hobby, while in the practice, I believe it was tin-foil; but of course, I, like *many* others, took great delight in the appearance of a well rounded, beautiful gold filling; but when I, at this date, in the radiant glare of all the many materials which have been evolved for saving teeth, see the names of such men as Ambler of Cleveland, Brockway of Brooklyn, Stockton of Newark, Ed. Darby and Uncle James Truman, (the two latter teachers of mine), all of whom to know, as it has been my privilege, was to *love*, among the vehement advocates of tin-foil as a saving medium, it makes my heart rejoice and the blood flow quicker in my veins. It is not very long ago that a gentleman, while on a visit to this coast from Detroit, a patient of mine in years gone by, wished me to look in his mouth at some fillings in the bicuspids and molars made by me in 1870; yes, they were there, and made from tin, teeth in a good state of preservation. I was naturally pleased to see such good results from among my early efforts, but ventured to remark: "How is it that you have lost your front teeth and have to resort to artificial ones?" "Oh!" said my friend, "You advised the filling of those with gold; after awhile they began to break down, and continued to, although I had them filled two or three times since, till I finally was obliged to lose them."

Well, methinks I hear some of the younger operators saying, "Neither he nor the other fellows who filled those front teeth knew how to make a gold filling." But I am in a position now (being out of the profession) that I can afford to take censure of that kind, but shall still continue to cling to my opinion of tin-foil as a material "par excellence" for saving teeth.

With very kind regards to you gentlemen and the cherished hope that the JOURNAL may long continue to thrive and that its supporters may appreciate the merits of tin-foil as long,

I remain

Yours most truly and sincerely,

G. ROSCOE THOMAS,

Pasadena, Cal.

EDITOR'S NOTES.

NEW FEATURES.

WE hope to add several new and distinctive features to the JOURNAL during the coming year.

With this we begin the insertion of a blank page for *reference memoranda*, believing it will be appreciated by every reader, particularly when looking up the literature on any special subject. Titles of any particular articles in this, or other journals, of special interest, may be jotted down; or note made of them that they may be read at some subsequent time when leisure affords a better opportunity. And, written on this bound leaflet, can always be found; they do not get lost.

In this way many valuable items, instead of being laid aside with only a glance or half an idea of their contents, will be thoroughly read, digested and put into practice.

After forming this habit of jotting down reference to articles you will soon be astonished at the amount of valuable material given in the journals, and realize how much important knowledge you have lost in the past by laying aside a journal with a part unread, a part half read and the remainder, perhaps, only glanced over in a hurried manner.

It is the intention, also, to illustrate more profusely this year and thus add to the value of material used.

Whenever any new ideas are presented, that will be of benefit to our readers, we shall adopt them at once. It will be our aim to work wholly in the interests of our subscribers.

OHIO STATE DENTAL SOCIETY.

Those who failed to attend the meeting of this society held at Columbus, Dec. 5–8, missed one of the best, if not *the* best meetings held since the reorganization in 1884. The attendance was up to the average, which was good for this year, everything considered, although several familiar faces of the old *stand-bys* were conspicuously absent, and in consequence detracted from the interest of the meeting, yet the discussions were interesting and profitable. The papers presented were above the average. Dr. G. Molyneaux elucidated the Bonwill method of articulation, illustrating with models, charts, etc., presenting, in connection, many original ideas.

Dr. L. E. Custer described his method of melting platinum by means of electricity. Each step in the paper was illustrated by actual demonstration, the current being taken from the incandescent circuit. Platinum scraps were melted down almost instantly and all gold or other contaminating metals were completely volatilized by the intense heat. The simplicity of the appliance and its being non-dangerous to life, at once sets it far in advance of anything heretofore discovered for this purpose.

Dr. Custer has applied for a patent on this method, to protect it, but has generously given the dental profession free and unrestrained use of it when applied to dentistry. The paper appears in this number of the Journal.

Dr. J. R. Callahan's paper on the use of sulfuric acid for opening root canals met with very little opposition. Dr. Callahan has been using this method for four years and has yet to see the first case where injury has been done. He says, however, that it it is not to be used carelessly, nor in every case, but only in special cases as described in the paper which will be found also in this issue. Other papers read were interesting and valuable and will appear in due time in The Ohio Journal.

At the clincs Dr. G. Molyneaux demonstrated the Bonwill method of articulation by mounting a double set of teeth for a practical case.

The Hollingsworth system of Crowns and Bridges was fully described.

Dr. L. E. Custer demonstrated the melting of platinum by his new process, and exhibited his electrical cabinet, (which was illustrated and described in the December number of the OHIO DENTAL JOURNAL) to which has been added the platinum melting device.

Dr. Grant Mitchell demonstrated his porcelain inlay work, restoring about one third of a broken down right central incisor. The tooth being devitalized a pin was anchored in the root and properly bent so as to securely hold the inlay. Undercuts in cavity and inlay were also used to secure the setting. When completed the tooth presented a very natural appearance.

Dr. L. L. Barber made and set a porcelain crown made in Downey furnace.

The crown made at the clinic was an incisor and when adjusted fit the root perfectly and presented a remarkably natural appearance.

The following gentlemen were admitted to membership in the society:

W. B. Chambers, Newark; W. D. Snyder, Sidney; T. J. Mason, Columbiana; C. A. Hawley, Milan; H. L. Ambler, Cleveland; E. E. Hall, Columbus; T. C. White, Cambridge; A. T. Whiteside, Dayton; A. H. Morey, Marysville; J. G. Spaeth, Cleveland; W. H. Hersh, Piqua.

The officers elected for the ensuing year are:

President, Dr. Chas. Welch, Wilmington; 1st Vice President, Dr. W. H. Todd, Columbus; 2d Vice President, Dr. Henry Barnes, Cleveland; Secretary, Dr. L. P. Bethel, Kent; Ass't Secretary, Dr. L. E. Custer, Dayton; Treasurer, Dr. C. I. Keely, Hamilton.

Board of Directors, three years:—O. N. Heise, C. M. Wright, J. R. Callahan, Grant Mitchell.

Executive Committee:—J. R. Callahan, Cincinnati, Chairman; L. P. Bethel, Kent; O. N. Heise, Cincinnati; W. H. Todd, Columbus; Grant Mitchell, Canton; F. H. Houghton, Columbus.

Publication Committee:—C. I. Keely, Hamilton; Chairman; L. E. Custer, Dayton; F. A. Hunter, Cincinnati.

Membership:—L. L. Barber, Toledo, Chairman; C. R. Butler, Cleveland; O. E. McConkey, Urbana.

The next meeting will be held at Columbus the first Tuesday in Dec. 1894.

NEW PUBLICATIONS.

A Practical Treatise on Mechanical Dentistry. By Joseph Richardson, M.D., D.D.S. Sixth edition. Revised and edited by Geo. W. Warren, D.D.S. With six hundred illustrations. Philadelphia: P. Blakiston, Son & Co., Pub., 1893. Price, cloth, $4.50; sheep, $5.50.

It is five years since the preceding edition was published and the great advance in this department of dentistry during that time has made it an arduous task to revise this work and bring it up to date. It has been done, however, and well done although it has necessitated re-writing almost the entire book. The portion on crown and bridge-work is almost entirely new and covers 204 pages; a volume in itself. This work for years has been the standard text-book for dental students and is to-day the best treatise on this subject, before the profession. We realize how easy it is, in preparing a work of this kind, to omit, unintentionally, some minor appliance or method, but are sorry to see some meritorious things omitted, such as the Downey Furnace; Richmond system of removable bridge work; Downey all-porcelain crown-work; Bonwill system of clasps; Molyneaux's modification of the Suersen obturator, and others. The reviser has displayed good judgment in not undertaking to present the methods of correcting irregularities; the book is bulky enough as it is and this should be a separate treatise. Useless methods and obsolete theories have been eliminated from the present edition and the author's effort to make it preëminently practical as a text-book for students, has been a successful one. It should be well received not only by the student but practitioner as well. Everyone who does mechanical work should be in possession of this treatise. Typographically the book is very creditable, a characteristic of this well-known publishing house.

Dental Questions and Answers. By Gustavus North, A.M., D.D.S., Springville, Ia. Price, $1.00.

In this little book of 73 pages will be found questions and answers in dental pathology and therapeutics, dental embryology, hygiene and care of children's teeth. While necessarily not complete in all details, yet contains questions and answers of importance that will assist the student in memorizing important portions of the text in works on these subjects.

POLK'S DENTAL DIRECTORY OF DENTISTS IN THE UNITED STATES is a valuable work for reference, containing as it does, an accurate list of dentists in each state, arranged by states and territories, and compiled alphabetically under the name of city, town, or village, in which the dentist is located, giving population of place, description of country, climate, etc. Price, $10. Sixty per cent discount to dentists or $6.00 net. Address R. L. Polk & Co., Pub., Detroit, Mich.

ANNOUNCEMENT.

VOLUME I. of the two-volume edition of the Funk & Wagnalls Standard Dictionary of the English language, issued on December 16th, has been four years in making; two hundred and thirty-eight editors and specialists have been employed upon it; and the cash outlay has been about a half million dollars. The advance orders for the work mount up into the tens of thousands.

The following letter was received by the publishers from a well-known gentleman, prominently identified with the late World's Fair at Chicago:

MINES AND MINING BUILDING,
JACKSON PARK, ILLINOIS.

Messrs. FUNK & WAGNALLS, New York City:

Gentlemen:—"I am pleased to inform you that the Standard Dictionary has been granted an award (diploma and medal) in group No. 150. The exact wording of all the awards will not be announced for probably three or four weeks."

The Dictionary exhibit consisted of a number of proof sheets, as the work was only part in type—this fact makes the award more significant.

The vocabulary of the Standard is extraordinarily rich and full, that of no other Dictionary nearly equaling it, although great care was taken to throw out all useless words.

The full number of words and terms in dictionaries for the entire alphabet is as follows: Stormonth, 50,000; Worcester, 105,000; Webster (International), 125,000; Century (six volumes, complete), 225,000; Standard, 300,000.

BRIEFS.

— Bleaching of badly discolored teeth with 25 % pyrozone used on cotton within the pulp canal, and outside by means of a spray, has proven successful in the hands of Dr. T. A. Broadbent.

— I think all deep-seated cavities in vital teeth should be lined before inserting metallic fillings; if that were done there would be less trouble from calcific deposits in the teeth.—*Dr. McQuillen.*

— Peroxide of Hydrogen used in drinking water is said to effectually destroy any cholera or typhoid germs that may be present. The strength advised is about one to one thousand, freshly prepared.

— When the mucous membrane of the mouth or throat is inflamed, rinse the mouth, and gargle the throat with pyrozone, then use to follow, a solution of boro-glycerin 1 to 10. This is effectual, and is a great soother.—*Review.*

— So much of dental work is done upon the authority of the tactile sense unaided by vision, that the careful systematic training of the touch should receive a fuller recognition and education, both in our colleges and by practitioners.—*Cosmos.*

— The universal forceps devised by Dr. Poinsot, of Paris, has changeable breaks. This instrument departs widely from the usual form, as the beaks are not closed by the leverages on the handle, but by a mechanism similar to a monkey-wrench.

— The tendency of Canada balsam to become red may be checked and the balsam bleached by the addition to the solution of a few crystals of pure metallic copper, precipitated from copper sulphate solution by any of the ordinary methods.

— In using alumnol care should be exercised to not use it too frequently. After three or four days' use of it successively, the gums will become abraded and tender. Once in three or four days is quite often enough to inject it between the roots and gums. Never inject it into the tissues.—*Review.*

— Dr. Palmer says he has used sea-grass for ligatures to bind teeth which had become loose, and it would last for from one to two months before it would decay and come away, and it would not become soiled and discolored as silk does. It was so smooth and so hard that it would serve every purpose of floss silk, and serve many uses which floss silk would not.

— If you can successfully save a tooth with amalgam or anything else, the pay should be commensurate with the services rendered, be it two, three, five or ten dollars. No wonder we hear the cry of "down with amalgam!" especially when we find it manipulated by the hand of carelessness or ignorance. It is in poor company and utterly helpless.—*E. G. Clark.*

— Dr. C. Sill uses vaseline to allay the irritation from the use of oxyphosphate and oxychlorid cements. He mixes it with the powder in the proportion of fifteen parts oxide of zinc to one of vaseline, grinding up together carefully. It absolutely prevents the irritation, and his experience teaches him that the usefulness of the filling is in no way impaired.

— Dr. Geo. B. Clement claims that pyorrhea alveolaris is caused by the calcic infiltration of the cementum, producing calcic hypostasis. His theory is that the cementum while it receives just so much nourishment as will allow it to retain its natural condition, will be healthy, but in case of supernutrition a condition of inflammation will occur, while in the opposite condition the microscopical vessels of nutrition in the cementum become obliterated by the deposition of lime-salts, and the disease pyorrhea alveolaris is the result.

— Dr. Barrie, Paris, France, exhibited at the Congress a hot-air injector with four adjustable points for puncturing abscesses, injecting abscesses, enlarging fistula, and for ablation of epulitic growths. The instrument is attached to a reservoir containing gasoline, to which there is a bulb attached for forcing air through the reservoir. In use the point is heated over the flame of an alcohol lamp or Bunsen burner, the heat being kept up by the combustion of gasoline vapor. It is very convenient for drying out teeth or any other purpose to which a cautery may be put.

OUR AFTERMATH.

Oysters With Teeth.—At the World's Columbian Congress Dr. Richards, of Knoxville, exhibited a set of artificial teeth, encrusted with young oysters, which was found on the coast of North Carolina.

Carved Block Teeth.—There were several specimens of this work shown by Dr. Kolliker, at the Congress. One was a full lower denture made on a base carved from the tusk of a hippopotamus, with natural teeth inserted; put in the mouth in 1855, and worn continuously until 1867, when it came into his possession upon the death of the patient. Another was an upper denture with English tube teeth in front on a gold plate and hippopotamus blocks for the molars. This piece was put in the mouth in 1870, and is very skillfully done. Another curiosity in the collection was a partial upper and lower set made of gold and connected by spiral springs, the upper to the lower. It had natural teeth attached; also teeth carved from the hippopotamus, both showing decay which had occurred after being placed in the mouth; made about 1830.

A Prosperous College.—At a banquet of the Dental and Medical Faculties of the Homoeopathic Hospital College, of Cleveland, at the Hollenden, November 28, 1893, Dr. Biggar, of the Medical Faculty, stated in an after-dinner speech, that the college was in a very prosperous condition in all of its departments—had more medical students than either of the other three medical schools of the city. It was also stated that the dental department had almost doubled its number of students—12 last year, 23 this year. This is the third year of this department. Although almost doubling its number of students, yet it was handicapped, somewhat, this year by the action, last August, of the National Association of Dental Faculties in refusing admittance into the association, because of the granting of certain honorary degrees at the end of the first session, for which the present faculty were not, in any sense, responsible. At the end of the first year a new faculty was organized that believes in higher dental education, and therefore, is in heartly accord with the aim of said association. The rules of this association were lived up to literally last year, are being lived up to this year and will continue to be as long as the present faculty has control of this department—which control it has now absolutely. Because of its desire to advance dental education this college expects to become, soon, a member of this association.—*Cleveland Correspondent.*

THE
OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

A FEW THINGS TO BE REMEMBERED.

BY L. P. HASKELL.

In ninety-nine per cent. of mouths the center of the palate is hard and unyielding, in fact the only portion of the upper jaw which does not change from absorption or yield to pressure. Unless provision is made for it, the plate will, sooner or later rock. This should be remedied by a "relief" in metal plates, of a thin film of wax on the model, extending well up on the anterior portion to near the margin of the process, and to within a quarter of an inch of the rear of plate. In a rubber plate the relief can be made by burring or scraping the plate.

There are more failures in artificial dentures from *faulty articulation* than from any other cause. To guard against this, in adjusting a denture in the mouth, see to it that none of the six anterior teeth touch,—in fact leave a margin of space. This will prevent the tilting of the plate from the rear. Be sure the bicuspids and first molars on both sides meet uniformly; have no pressure on the second molar, and especially if the lower occluding molar leans forward, as it would crowd the denture forward.

In arranging the *lower* teeth, commence with the second bicuspid so as to ensure a perfect interlocking of the cusps. The

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

fronts must be accommodated to the space allotted to them by crowding or overlapping, if needed.

In ordering teeth from the dealer, see that bicuspids and molars are provided that have a good length of porcelain *above* the pins, so that if necessary to grind, in articulating, the porcelain will not be ground away. The teeth will also present a more natural appearance. Insist upon this from your dealer.

If you desire to restore the expression of the mouth which has been sacrificed by the extraction of the cuspid teeth, remember this invariable rule, viz: the plate can and should be worn higher over these teeth than elsewhere, and the artificial gum made fuller.

Leave the necks of the cuspids slightly fuller than the other teeth.

Finish the rubber with a festoon around the necks of the teeth.

In selecting teeth for metal plate and crown work, if you desire *strength*, use the perpendicular rather than the cross-pins, and they are less liable to crack in soldering, and do not let your dealer give you anything else.

In polishing metal work, use *oil* with your pumice both on the felt and the brush. To reach all the depressions and interstices, drive a pine stick into the lathe chuck made for it and with sharp knife turn it to a blunt point.

A NOVEL SPLINT AND RETAINING APPLIANCE.

BY OTTO ARNOLD, D.D.S., COLUMBUS, O.

Being called upon one night to attend a lad who had fallen fallen from the stairway landing to the floor below, losing a tooth in the melee, I gathered together an assortment of instruments and appliances, having in mind the possible replanting of the tooth, and hastened to the lad's home where the accident had occurred.

I found the little fellow (aged 9 years) pretty badly bruised generally, but no bones broken, except that the superior anterior alveolus between the cuspids was considerably shattered, one central missing and the remaining incisors quite loose, with the mucous membrane unbroken.

The ejected tooth was immediately prepared by removing its pulp and filling the canal with gutta-percha, carefully avoiding injury to the peridental membrane, then the tooth was immersed in a tepid bichlorid solution 1-1000.

The socket was now prepared antiseptically by syringing with a like solution and the tooth returned to its socket. I was not a little concerned all along as to the best means for retaining the replanted tooth, likewise, how best to splint the shattered alveolus with its loosened teeth.

While still in a state of indecision, I proceeded on general principles, to soften some modelling compound preparatory to taking an impression of the part involved, when the thought occurred to me that this substance would be just the thing to answer for a combined splint and retaining appliance.

Carrying my thought into execution, I moulded the softened compound carefully and firmly about the parts involved, inclosing the alveolus and teeth, from tuberosity to tuberosity, extending up beyond the injury anteriorly with as little bulk as was consistent with strength and comfort. Before the mass was quite hard the lower jaw was forced up and an articulating contact obtained for the lower teeth.

To all appearances the parts were now well supported, and the fixture seemed comfortable, promising effectual results. With a parting injunction to rinse the mouth frequently with Listerine and report any change in the stability of the appliance, I left the patient in charge of the attending surgeon.

I did not again see the case until ten days after the accident, when the little fellow appeared at my office with the appliance still in situ. Upon examination I found the substance had more or less deteriorated, but was still firm in its position. Concluding that sufficient time had elapsed for union, I removed the appliance without difficulty and found the results most gratifying.

The injured parts had healed, the teeth were firm in their sockets, which conditions are still maintained at the present writing—more than two years from time of injury.

I am quite well aware that this case presents no remarkable or extraordinary features, and is only one of many of its kind occurring frequently. My only excuse for reporting it, is to speak of the use of modelling compound for the purpose mentioned as a novelty, at least to me.

I believe, that in a large per cent. of cases of jaw injuries, this substance will meet all the requirements of a perfect splint material, with conspicuous advantages over those now in common use, viz: simplicity of manipulation, ease of adaptation and rigidity when hard.

"VIS MEDICATRIX NATURÆ."[*]

BY W. H. WHITSLAR, M.D., D.D.S., CLEVELAND, O.

The diseases that the human body is subject to, number into the thousands. The teeth as important organs of the human economy have diseases peculiar to themselves, also those that are symptomatically observed in remote parts of the body.

Upon first consideration it would appear that there are many diseases of the teeth, but scarcely fifty idiopathic ones can be numbered. This seems, however, to be a great many. Literally, only the organized portion of the teeth may become diseased. The mineral constituents while predominant in quantity are subservient to the organized material interposed. Vital Phenomena aid in resisting disease, but external influences may, as in caries, cause disintegration of mineral substances leaving only the live portions with insufficient material to make a healthy stump.

It is here that the dental surgeon with his sharp excavators and chisels removes the disease.

If perchance there remains enough body to aid retention of foreign materials, like a surgeon who supplies a missing portion of the skull with metallic substances, the dental surgeon inserts fillings for the arrest of decay and the restoration of form, the restoration of tooth substance being impossible.

The practice of dentistry is a surgical procedure in the main, since it consists of the manual operations adapted to cure of diseases.

A surgeon aptates tissue, Nature performs the cure. The dentist cannot aptate the hard tissue because of the quantity being too great to be carried into the circulation or otherwise substantially affected by it. He supplies their loss and the presence of foreign materials is either tolerated or rebuked by the remaining living parts.

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[*] Read before the Ohio State Dental Society, December, 1893.

Pain is the first rebuke and efforts to repair are the first fruits of Nature to resist invasion.

The resiliency of Nature is peculiarly strong in the absorption of deciduous teeth, not abstractedly, but for the provision of teeth for mastication in ultimately strong men and women.

We here have growth, growth which is the antitype of repair, and repair which is the repetition of growth. The same elements are necessary to the formation of results in either.

Rest is the necessary antecedent to both growth and repair. This principle is noticeable in the vegetable kingdom. "All plants require rest and obtain it in some countries by the rigor of winter, in others by the scorching heat of summer." Said John Hunter, "Some plants close their leaves, others their flowers at particular hours of the day or night, and with such regularity does this period of rest take place that more than one vegetable physiologist has preposed to construct from them, a floral clock."

Repair in the young body is accentuated by conditions of the body and its requirements. It is often necessary in providing remedies for growth and repair, to have a knowledge of the temperament, age, physical condition, occupation and general surrounding circumstances of the individual, as a basis upon which to advise remedial application.

The healing power of Nature has a constant tendency to repair injuries and this is accomplished by interposing material to prevent invasion of further injury or disease.

It is clinically observed that, under certain classes of fillings a hardening of tissue results. This cannot be due to the hardening of each molecule of the mineral substance composing the tooth, but that remoleculization probably is due to vital fluids which may act as the water of crystallization.

In the pulp and tissues about the teeth, Nature provides a coagulable lymph to form a splint, for the purpose of coaptation of divided tissues in order to secure a degree of rest. This inflammatory effusion is not the ultimate bond of union, but holds the parts in apposition, prevents friction, provides against invasion of microbes, and allows Nature to dispose of the offending cause. This is why, when we wound the gums as in the removal of tartar the result of injury to the gum is so frequently *nil*.

The fibrous nature of the gum aids in holding the lymph, interlocking it in its meshes, thus providing a safeguard against the ravaging microbes of disease, or the toxic properties of the saliva.

There is an inherent power in every cell to recovery, so that as time elapses, the cells under this seruminal matrix become old enough to withstand outward influences, a solvent then separates the dried matrix and it is cast off. This is precisely what we seek to accomplish in treatment, i. e. to remove cause of disease and protect the tissues. It is surprising what Nature will do for us.

Too often the praise is ascribed to the skill of the dentist, though skill is necessary to combat the evils of too much medicament, thus limiting Nature's right to perform its natural functions.

The dental pulp is so sensitive an organ that it is our belief that more pulps die from over medication than from other causes. Rapidity of introduction of various medicaments alternate shocks that at once exhaust the vital energy of the cells, also causing congestion of the vessels. It is further our belief that following the death of the pulp, the pulp canal is made a reservoir for all kinds of fluids supposedly for medication but inviting necrosis of the tissues of the apical space. Abscesses encroach upon the other tissues and destroy them followed by pain and constitutional disturbances. We open abscesses to relieve these conditions and evacuate fluid to cause coaptation of the organized tissue. Nature will cement them together. Our efforts to cure abscesses are sometimes failures because putresable substances do not permit coaptation of desirable tissues. In some of these instances our medication though scientifically (?) applied results in dire failure. The object of this paper is not to decry the use of medicines but to express the sentiment that it is a laudable and a progressive profession that is seeking the best remedies for disease.

It is, however, patent that while we favor the correct application of medicaments liberally, let us be conscious of the healing power of Nature.

PORCELAIN CROWNS.

BY GUSTAVUS NORTH, A.M., D.D.S., SPRINGVILLE, IOWA.

A NUMBER of porcelain crowns of different designs, have been brought before the profession the past few years. Some have proven successful and some unsuccessful, but we must remember the success of an operation depends greatly on the skill of the operator. Some men will fail where others succeed with the same operation.

A crown that is strong, durable, and easily made, is one that will suit most operators. Johnson & Lund manufacture a removable screw pin porcelain crown, that seems to fill the many wants of an ideal crown.

After the root has been prepared and properly shaped, remove the screw-pin and grind the crown to fit the prepared surface of the root. After the crown and root are properly prepared, the screw-pin should be made to fit the length and curvature of the root canal and then cemented in the porcelain crown, the portion of the pin or pivot that extends in the root canal should be serrated on the sides, so as to hold the crown firm when completed.

The root must be slightly beveled toward the crown, so a gold band can be tightly driven on the root, the band should be made of twenty-two k. gold, number thirty gauge, and about one-eighth of an inch in width, one-half of the width of the band to cover the beveled part of the root, the other half to receive the porcelain crown.

The gold band can be made narrow on the labial surface of the incisors and cuspids, so it will be scarcely noticeable if so desired.

After the gold band and root are prepared, mix some durable cement to the consistency of thick cream and use only enough to fill vacancies. A surplus of cement is objectionable, the crown should be firmly pressed into position and we will have a perfectly fitting crown, easily made and easily adjusted.

The Logan crown can be used in a similar way, but not as easily prepared on account of the stationary pin.

COMPILATIONS.

THE RELIEF OF PAIN FROM DISEASES OF THE DENTAL PULP AND PERIDENTAL MEMBRANE.

BY A. W. HARLAN, M.D., D.D.S., CHICAGO, ILL.

The dental pulp is a frequent cause of pain after near or actual exposure of its surface to external agencies. When the pulp is exposed by accident the pain is easily relieved by protecting it from the air or moistnre with chloral camphor, phenol camphor, oleate of cocaine, melted carbolic acid or other local anesthetic. The surface should be dried if possible before making the application. A mixture of collodion and carbolic acid, ten or twenty per cent. will serve as a temporary dressing. Twenty parts of carbolic acid, five parts of the hydrochlorate of cocaine and seventy-five parts of liquid vaseline will arrest pain from exposure of the pulp. I have frequently used twenty parts of a four per cent. solution of cocaine, thirty parts of pure oil of sassafras and fifty parts of melted carbolic acid as a local covering. This is only slightly caustic or escharotic. The bottle should be shaken before using when the mixture is fresh. The pain from a hyperæmic pulp is quickly relieved by puncture, when possible, if not, torsion will sometimes relieve the pain. Remedies administered internally for retarding the circulation will seldom be effective in relieving the hyperæmic condition. Sometimes when tortion is practiced the addition of counter-irritation may relieve the pain. When the pulp of a tooth has been capped with any material before it is in a normal condition, there may be a pain continuous or intermittent. Should this continue in spite of torsion or counter-irritation the filling must be removed. Even this will not always relieve the pain and the pulp may have to be destroyed before the pain will cease. Of course it is understood that a pulp should not be capped when irritated or inflamed, but many pulps are capped in this condition and the only salvation for them is to remove tbe capping.

The pain from a pulp where calcification of its substance is going on cannot be relieved permanently save by destruction of the organ. If the patient can endure the pain, in a course of time the pulp will be obliterated. Usually the patient will not endure such agony for very long and unless relief is afforded the tooth will be exstracted by some other dentist.

The pain from congestion of the pulp and the formation of pus in its substance can only be relieved by getting direct access to it and pricking it to relieve the overfull vessels. After the tension has been relieved the pain does not always cease. It has been a favorite method with me to wash the cavity with peroxide of hydrogen at once and quickly dry the cavity; apply pure chloroform on cotton, then melted carbolic acid. In five or ten minutes the patient will be comfortable. It is my theory to destroy the pulp if there is no probability of saving it. I might attempt to coax it back to health if it were an exposed front tooth in a young person's mouth. There are few cases where it is possible to retain the vitality of a pulp after suppuration of a small portion of its substance. The mere puncturing of a pulp with a sharp pointed instrument to relieve congestion or hyperæmia is not always sufficient reason for the destruction of a pulp unless the vital powers are low or the patient is past fifty years of age; then the recuperative forces may not be sufficient to enable it to live under a capping. Drying the surface of a suddenly exposed pulp and painting it with collodion will arrest pain. When the pulp is dead and the pain results from pressure of pus beyond the apex, the manifest duty of the surgeon is to give it exit, through the root canal or by drilling into the alveolus through the process. If a simple pericementitis has to be dealt with, calcium sulphide 1-10 gr. pill every ten minutes until six have been taken will ordinarily arrest pain. Prior to this an aperient may be administered. Citrate of magnesia, a seidletz powder, hunyadi janos, or some other internal remedy. Counter-irritation, tincture of capsicum, cantharides, ammonia, chloroform, absolute alcohol or a metal disk of the size and thickness of a copper cent dropped in water before using it. When there is a pocket alongside the root, wash with pyrozone, then inject into the pocket two or three drops of vinum opii or a twenty per cent. solution of menthol in alcohol, or ten per cent. acid carbolic in liquid vaseline. Bathe face in hot water, place towels or napkins on the face after dipping them in hot water 140° F. Keep changing them and relief will come. When the pulp is exposed at the apex destroy it.—*Dental Review.*

ELECTROTYPE MODELS.

BY LEONARD BROWN, L.D.S., ENG.

Electrotyping was one of the earliest outgrowths of the galvanoplastic art, and is now one of the most valuable and important of its branches. The art of electrotyping, which has grown to be a great industry, indispensable alike to printer and publisher, has, I believe, never been introduced into the laboratory of the dental surgeon. In this communication, however, I hope to show that it may be used to advantage in obtaining models of the mouth coated with a layer of copper.

The impression may be taken in any of the compositions in common use. If the impression is taken in plaster it will be necessary to boil it in white wax before proceeding to the second stage of the process, namely, "metallizing the impression." The impresion having been removed from the tray in which it was taken, the surface must be thoroughly blackleaded. This step is necessary in order to obtain a good conducting surface on which the electro deposition of copper may take place. Special care must be taken that the coating of blacklead be very complete, penetrating into every line and hollow of the impression, for if this is not the case the deposit of metal will be imperfect.

I have found in all my experiments that the ordinary stove blacklead answers every requirement of this part of the process, although pure plumbago is recommended. The blacklead is divided into a fine powder by rubbing the cake with a moderately stiff brush; the powder thus obtained may then be applied in a dry condition to the surface of the impression, care being taken to go down into the depths of the teeth, the brushing being continued until a fine lustre is seen all over the surface, any superfluous particles being blown off.

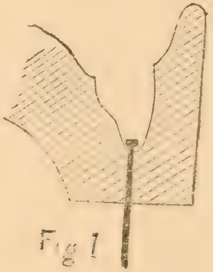

Fig 1

A better way to apply the blacklead is to moisten the brush in a little spirits of wine, and then by applying the dust very slightly moistened, it will be found to adhere more readily to the impression, and after the spirit has thoroughly evaporated a brilliant lustre may be obtained by means of a dry camel-hair brush.

The blackleading process finished, it is next necessary to pass pins down all standing teeth in the impression (fig. 1). The pins are then connected together at the back (fig. 2) with copper wire, the ends (*a*) and (*b*) being utilized for attaching to the battery.

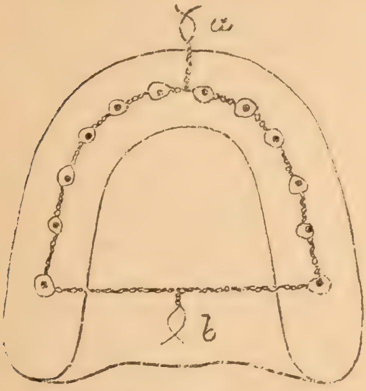

Fig. 2

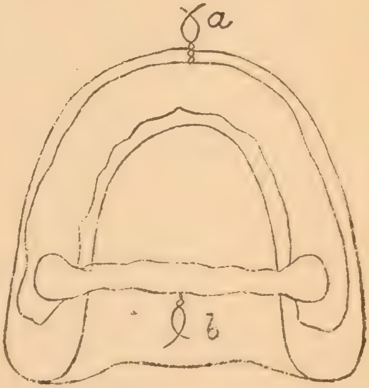

Fig. 3

The object of passing these pins is to ensure the metal passing down into the depths of the impression, and so obtaining a more even deposit. It is needless to point out that all pins and connecting wires must be thoroughly clean.

The step indicated in fig. 2 having been carried out, all wires so exposed at the back of the impression must be insulated with composition or wax, except at the ends (*a* and *b*) where it will be connected with the battery (fig. 3 illustrates this stage); if this is not done the deposit will fly to the exposed wires in preference to the blacklead surface. As an extra precaution it is as well to again dust round the heads of the pins with blacklead in order to restore any of the surface which may have been disturbed. To prevent the deposit spreading where it is not wanted, the edges of the impression may then be scraped, thus removing all blacklead except where the deposit is required.

The moulds before being placed in the depositing vat must be thoroughly washed by directing on their surface a strong stream of water. The impressions are then placed into the vat; a rather violent shaking of the mould is necessary during this step, as it tends to shake out any air bubbles which may lodge in the deposits of the teeth.

There are many different kinds of apparatus for depositing the layer of copper which may be used, but I shall only describe the one which I am in the habit of using, and which is very simple. The various other forms of apparatus may be seen in any of the many text books on this subject. Into a vessel such as glass or porcelain (A, fig. 4) which will resist the action of sulphuric acid, a known quantity of water is placed; to this is added from 8 to 10 per cent. of sulphuric acid. The acid should be added to the water during continual agitation; if this is not done the acid, being much heavier than water sinks to the bottom of the vessel, and there, slowly mixing with the water, generates such great heat that the glass or porcelain may be broken.

Sulphate of copper is then dissolved in this liquid to form a saturated solution at the ordinary temperature. The best way to dissolve the copper sulphate is to suspend the crystals in a perforated box of porcelain or gutta-percha, or in a cloth bag (B, fig. 4) just below the surface of the liquid. By this method as soon as a portion of the liquid becomes saturated it becomes denser and sinks to the bottom, while the lighter liquid takes its place and also becomes saturated; this method obviates the necessity of stirring.

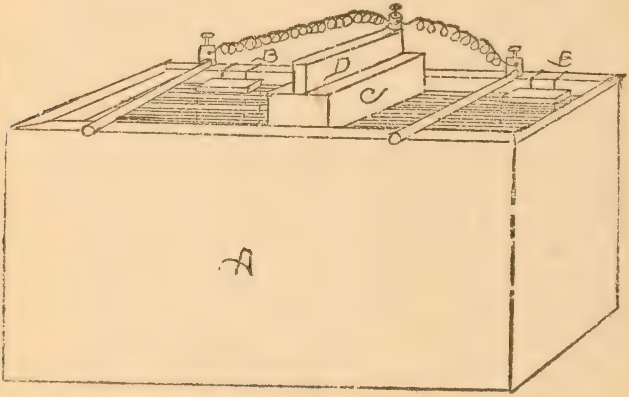

FIG. 4

The bath while working must be kept saturated, that is, fresh supplies of copper sulphate must be put in the box or bags from time to time to replace that which is decomposed to form the metallic deposit. The bath is always used cold.

The copper may be reduced from the bath by two methods:

(1) by a separate current, from a voltaic battery or the dynamo: (2) by a modified process in which the object to be covered forms the positive pole. The latter method, being the simplest, I shall describe at some length. The copper sulphate bath having been prepared as described above, a porous cell (C, fig. 4) is placed in the centre filled with water, acidulated with 5 per cent. of sulphuric acid, and into this cell is placed an amalgamated zinc plate (D, fig. 4), which forms the negative pole, and which is connected with copper rods. On these rods these impressions are slung with thin copper wire.

With the impression prepared as described and the above simple and inexpensive apparatus, it is easy to obtain the copper deposit. The model should be looked at from time to time to see that all is going on well, the deposit usually takes about three hours, but the time depends upon the strength of the battery and the thickness of the deposit required. When the copper deposit has been obtained plaster may be poured into the impression and the model drawn in the usual way. A metal model is thus obtained, and it only remains for me now to urge the advantages of this process, and the ways of making use of those advantages.

By this method we obtain a model which can be worked upon without fear of rubbing, breaking, or injuring in any way; a model which does not shrink however long it is kept; is smooth and dry, and can be easily drawn from the sand in casting for metal work, or better still, metal can be poured direct into the copper shell after the composition has been removed, and the plate struck up direct on to the first model of the mouth. Lastly, by pressing another of the arts into our service, namely, that of electro-tinning, we can obtain a model which can be vulcanized on giving a polished surface to the vulcanite coming in contact with it; the model also being preserved for future use or reference.

The method of electro-tinning which seems to give the best results is the following:—The electrical force is generated from two or more Daniell's cells, each of which is made up of an exterior earthen jar which is partly filled with an acidulated saturated solution of copper sulphate, in which is a sheet of copper bent round to the side of the vessel; within this is a porous cell containing an amalgamated zinc plate and dilute sulphuric acid 10 per cent. The battery is connected with the tinning bath, which is made in the following manner:

	Parts.
Distilled water	1,000
Pyrophosphate of sodium . . .	10
Protochloride of tin (fused) . .	1

The water is put into an earthen vessel lined with plates or anodes of tin which are connected with the positive pole (copper) of the battery. The pyrophosphate of sodium is then introduced and stirred in; when this is dissolved the tin salt is placed in a copper wire sieve half immersed in the solution. A milk-white precipitate is then formed, which disappears on continued stirring. When the liquid becomes clear the bath is ready for use, and it only remains to place into it the copper shell, suspended on a copper rod connected with the negative pole (zinc) of the battery, allowing it to remain in the solution till well covered. It is necessary from time to time to add, in small quantities, a mixtnre of equal parts of the tin salt, and pyrophosphate. The solution of the salts should always be made by means of the sieve, as the tin will not dissolve if allowed to fall to the bottom.

The battery used in this process may be used for the electrotyping; if the manipulator wishes to use a separate current instead of the apparatus described for that purpose, a sheet of copper must be connected with the positive pole (copper), the negative pole (zinc) being connected with the mould for electrotyping. After tinning and scratch-brushing, the model is ready to vulcanize on, but may be given a coat of collodion as an extra precaution; but this is not needed if a good thick deposit of tin has been obtained.—*Jour. Brit. D. Asso.*

ALL SORTS.

Diiodoform is a new almost odorless succedaneum for iodoform. It has the formula C_2I_4, and is, chemically speaking, ethylene diiodide. It is insoluble in water, slightly soluble in alcohol and ether, and is soluble in chloroform, carbon bisulphide, benzine and toluol. It is decomposed by light, assuming a peculiar odor. It is made by treating acetylene biniodide with iodine in excess.—*Pharm. Zeit.*

Day (J. B.) on a Method of Making and Repairing Plates without Waxing or Packing.—In partial cases, where convenient, he prefers to grind the teeth to the mouth, thus insuring proper occlusion.

He places the teeth in position on the model, and secures them there with plaster; then with a hot spatula he adapts rubber to the model, and smooths it to the form desired. By this method he dispenses with investment, and has to flask the case only for the purpose of vulcanizing. —*Extract Cosmos.*

A Mechanical Means of Treating Trigeminal Neuralgia, Etc. —The *Centralblatt fur klinische Medicin*, for December, mentions an expedient described by Dr. Naegely, for the treatment of trigeminal neuralgia, hemicrania, globus hystericus, and nervous vomiting. It consists in seizing the two greater cornua of the hyoid bone with both thumbs and holding the bone, together with the larynx, up for from sixty to ninety seconds. The efficacy of this manipulation is said to have been proved in a sufficient number of cases. The author cannot explain its *modus operandi*, but he is inclined to think that it calls an inhibitory reflex into play.

The Germicidal Properties of Human Mucus.—In discussing the question of vital resistance and immunity the action of the mucous secretions are deserving of consideration. From investigations carried out by Drs. Wurtz and Lermoyez it would seem that mucus collected with suitable precautions from the nasal mucous membrane possesses a well-marked bactericidal power on many micro-organisms; especially is this the case with the bacillus anthracis, the spores of the bacillus being killed after three hours' exposure to the action of nasal mucus. The mucus exerts a similar action upon nearly all pathogenic bacteria, but with variable intensity. To the function of the nasal mucous membrane must therefore be added the fact that it prevents the growth of bacteria, and may even destroy them altogether.

Burns (S.) on A Convenient Corundum Stone Moistener.—Often while grinding down a root for crown or bridge-work, it has been found inconvenient to keep the corundum stone wet. A simple method is as follows: Take the syringe usually found on the operating table, fill it with water; loop a small rubber band through the ring on the end of the piston, and pass your little finger through the remaining loop; grasp the syringe well up to the nozzle, and cause pressure to be brought to bear on the piston by drawing forward the finger which is through the loop, thus causing the elastic band to tighten. By this means the operator can cause the water to drop or flow, as desired. By correctly holding the syringe, two fingers will reman free to assist in holding lip, etc.—*Extract Dom. Dent. Jour.*

Care and Preservation of Eyesight.—Dr. L. Webster Fox, in a lecture published in the *Journal of the Franklin Institute*, discusses eyesight in middle life and old age, and gives certain hints for its care preservation, from which the following facts are abstracted: In addition to the well known effects of tobacco and alcohol upon the optic nerve, it is pointed out that the drinking of beer and wine leads to changes in the crystalline lens. Deleterious influence upon vision is ascribed also to constricting articles of neckwear, owing to the impeding of the return column of the blood. Touching the question of type-writing, Fox advises that if there is any visual defect, that after the prescription of the proper glasses, if round finger tips or keys are used, a change should be made to a machine having rectangular keys, which in his experience are the least hurtful to the eyes. Among the concluding hygienic hints the following are given: Up to forty years of age the eyes should be bathed daily with cold water. After the fiftieth year the eyes should be douched morning and evening with water as hot as can be borne, followed with cold water.

"I Guess."—It takes a lot of guessing before one discovers how many beans there are in a quart bottle. But somebody either guesses right, or guesses near it. Still it is pure conjecture.

Sometimes we are disposed to guess that there is a good deal of this random reasoning in our profession; that sometimes very dogmatic opinions are pronounced as the etiology, for instance, of pyorrhea alveolaris, upon no sounder reason or pathology than pure guess-work. Perhaps it does no harm after all, and an ignoromus may blunder upon the truth while a genius is diligently in search of it. Nevertheless, if dentistry and dental pathology are admitted to the rank of scientific professions, we must not imagine that there is a separate and distinct pathology of the teeth and adjacent structures, or that we can ignore the possibility, and indeed the frequent certainty of the constitutional origin of the local diseases we treat. Etiology and symptomatology need to be more strictly studied in relation to dental disease. The fact is, if we stop to think about it, it is often easier to diagnose upon correct principles, than to guess. Our pathology should not be conducted like a bean-guessing bee. —*Editorial Dom. Den. Jour.*

Burns (S.) on Excluding Moisture from Cavities in Teeth.—Often in putting in plastic fillings, especially where objection is taken to to the use of the rubber dam or napkins, it is found very difficult to keep the cavities dry. The following method will be found very convenient under such circumstances: First, heat a small piece of impression compound, then dry off the gums surrounding the teeth to be operated on by means of a pellet of cotton saturated with alcohol; with the thumb and forefingers force the compound over the teeth. It is well to mark on the compound the exact point where the cavities lie. Having done this, while the compound is yet soft, cut out that which overlies the cavities. Carefully remove the *debris*, and it will be found that the lingual or palatine wall (as the case may be) remains intact, in compound. Should any trouble exist in getting the compound to remain in position, better attachment may be had by drying off the gum, and painting it over with copal-ether varnish. This will dry very quickly and adhere firmly.

In the above method the irritation to the sensory nerves is not so great as in the use of rubber dam or napkins. Greater freedom is given the patient to swallow the rapidly increasing flow of saliva, and, above all, the advantage in having the palatine wall built up so easily and perfectly, alone repays. If much space exist between the teeth, a portion of compound may be left to act as a matrix between two fillings.—*Ext. Dom. Dent. Jour.*

Brubaker (A. P.) on the Etiology of Pus Formation.—In the formation of pus, the first element, apparently, has been overlooked. The formation of pus is, of course, simply one of the stages of inflammation, and inflammation is invariably preceded by a state of congestion, by which is meant a condition of paralysis of the walls of the smaller blood-vessels. As soon as there is this impaired circulation there is an aggregation of the white blood-corpuscles along the walls and the emigration into the surrounding tissue. With the cessation of the blood-flow there is at once an impairment in the nutrition of these tissues which leads to a lessening of their vitality. This is the first step, and which has been alluded to as retrograde change in the tissue-cells. The mere emigration of the white blood-corpuscles through the cells of the blood-vessels, carrying with them various germs, would not in themselves give rise to the formation of pus. Germs in and of themselves cannot produce pus until there is impaired vitality of the tissues, which allows them to disintegrate the tissue molecules. Therefore I don't see how it is possible for pus to be formed anywhere in the body, except on the surface, unless you have the two factors, impaired vitality and presence of the germ. How the germ gets in the subcutaneous tissue to produce pus is, of course, a question, but I think they are absorbed by the white blood-corpuscles and are carried by them to the tissues, because they are constantly migrating.—*Extract International.*

Excellent Rules in the Care of the Teeth.—One of the most skillful dentists in New York gives these rules for the care of the teeth:

Use a soft brush and water the temperature of the mouth. Brush the teeth up and down in the morning, before going to bed, and after eating, whether it is three or six times a day. Use a good tooth powder twice a week, not oftener, except in case of sickness, when the acids from a disordered stomach are apt to have an unwholesome effect upon the dentine. Avoid all tooth pastes and dentifrices that foam in the mouth; the lather is a sure sign of soap, and soap injures the gums, without in any way cleansing the teeth.

The very best powder is of precipitated chalk; it is absolutely harmless and will clean the enamel without affecting the gums. Orris root or a little winter-green added gives a pleasant flavor, but in no way improves the chalk. At least a quart of tepid water should be used in rinsing the mouth. A teaspoonful of Listerine in half a glass of water used as a wash and gargle after meals is excellent; it is good for sore or loose gums; it sweetens the mouth and is a valuable antiseptic, destroying promptly all odors emanating from diseased gums and teeth. Coarse, hard brushes and soapy dentifrices cause the gum to recede, leaving the dentine exposed. Use a quill pick if necessary after eating, but a piece of waxed floss is better. These rules are worth heeding.

Be assured of the genuine Listerine by purchasing an original bottle.

Furrowed Enamel.—An interesting case of furrowed enamel came under my observation some time ago. It was that of a boy aged fifteen. From the gingival margin to about half way down to the cutting edge of the six front upper and lower teeth, the enamel was perfect. Beyond that line the grooves ran across each tooth; the cusps of all the cuspids were absent. Throughout the grooves there were pits and notches. The first four permanent molars were entirely devoid of enamel and no appearance of their cusps.

I learned the history of the case as follows: The child was vaccinated by a nurse when two months old, with vaccine from a syphilitic subject. No hereditary taint in either parent. The sore was like that of chancre, ending with secondary syphilis. The child had eruptions for over twelve months. Of course, it is easy to understand how the enamel development would be arrested from lack of nutrition in the enamel organ. Such cases of arrested development from scarlet fever, etc., are not rare. This is the only case I ever met, due to the cause mentioned, and the history of which is so perfectly clear and reliable.—*Dom. D. Jour.*

Mitchell (W.) on a Method of Attaching a Porcelain Face to a Pivot where the Face has been Broken off.—I have a new method of attaching a porcelain face to a pivot, where the face has been broken off, leaving the pivot *in situ* and in a solid condition, and where it would be inadvisable to remove it, with the collar or pin perfectly firm and merely the face broken off. The method of repairing it is to cut the pin off, and grind it down, and with a separating file or (as I prefer) a small circular saw in the engine, cut down to where the pin originally was, making a forked arrangement for the pin to set down in. Adjust the porcelain face in the desired position, and with a small amount of modelling composition take an impression of the back of the tooth with the pins running through the backing as far as possible, and let the impression material run over the point of the new face. Take it off, and pour carefully, so as to get a good impression, then remove, and you have the tooth set up in its new position. Then make use of an excavator or a sharp-pointed knife to cut away a portion of the model; and take a piece of very soft platinum and anneal it, cutting a couple of holes for the pins to go through, and making a groove near the base of the old backing so that the edge of the platinum may come down; leaving it in the condition so that when flush it can be finished up nicely. Stick together with sticky wax the backing and the tooth, remove carefully and invest in plaster and sand, or marble-dust, filling the inside perfectly, and finish as usual. The crown is set with cement.—*International Jour.*

Immediate Prosthesis.—Dr. Gordon's exhibit of so-called "Immediate Prosthesis" originally introduced by C. Martin, of Lyons, France, was one of the extremely interesting exhibits at the Columbian Congress. One was a hard-rubber piece to substitute for a portion of a jaw and teeth which had been resected on account of disease. This piece was made before the surgical operation, measurements having been made for size and shape. Immediately after the operation the piece was placed in position and screwed to the remaining portion of the jaw. It was simply a temporary appliance to prevent the falling in of the parts where the muscles are inserted, and after being worn a few months, its object being accomplished, it was removed and replaced with a hard-rubber plate and teeth of similar form. Also soft-rubber vela to be attached to hard-rubber plates for closing fissures in the soft palate. In constructing this apparatus, he dissolves rubber in chloroform and paints it over his matrix or mold. In this way he avoids air-spaces and consequent porosity after vulcanization. In one case the velum is hollow and subsequently partially filled with water, to make it more adaptable to the soft parts. This is done by vulcanizing it over a plaster core; then the piece is punctured at some point and the plaster removed through the opening, and partially filled with water and closed by means of a disk or washer and screw, by which also the attachment is made to the plate. Dr. Gordon exhibited an artificial tongue made of soft rubber, filled with water. This can be introduced after an operation necessitating the removal of the tongue; it can be slightly used and controlled by the remaining stump.

Buccal Antisepsis.—According to Dr. P. Una, (Hamburg), the buccal cavity is most efficaciously disinfected by cleaning the teeth with a brush thoroughly impregnated with powdered chlorate of potash. Needless to add that the mouth should then be repeatedly rinsed with water.

Employed in the manner above described chlorate of potash is said to exert a powerfully antiseptic action in virtue both of its bactericidal properties of the free secretion of saliva and mucus produced, which effectually clears the mouth of particles of food as well as of mucous and epithelial *debris*. The operation produces a cool sensation in the mouth which extends to the tonsils and pharynx like the antiseptic action of the salt in question. It restores the purity of the breath in cases of fœtor and it is an excellent prophylactic against infectious sore throat and diphtheria. The application of powdered chlorate of potash to the healthy buccal mucous membrane is unattended by any pain but it becomes painful when the membrane is eroded or ulcerated, as for example in cases of mercurial stomatitis. But the pain is not very severe and only of short duration; moreover it serves as an indication of the presence of buccal lesions which might otherwise escape detection. The pain rapidly disappears if the application of chlorate of potassium to the teeth and mouth be continued, this substance being the most efficacious remedy at present known for mercurial stomatitis. If for some cause or other the patient objects to the use of pure chlorate of potash, the latter may be replaced by a paste compound of a mixture of prepared chalk, oris powder, soap and glycerine, to which fifty per cent. of chlorate of potassium is added.

Chlorate of potash should only be employed as a tooth powder by adults on account of the risk of intoxication which may arise from the salts being swallowed by children.—*The Medical Week.*

Fillebrown (T.) on A New Method of Administering Ether. The chief difficulty which we have had in etherizing patients is that we have frequently been obliged to stop work in order to re-etherize, and it takes longer to etherize than it does to do an ordinary operation. Last fall I became acquainted with Dr. Packard's method of etherizing, which consists in supplying an atmosphere with a definite amount of ether vapor in it. It occurred to me to extend this principle and make the apparatus on a large scale. I used a wash bottle, such as is made for purifying gas. You will see that there are two tubes passing through the cork of the bottle, which contains ether. Into the long tube I pass a column of air driven by the Fletcher bellows, and this stop-cock controls the amount of air which shall pass through the ether. The vapor issues from the shorter tube, which can be of any good length, and the whole is placed in such a position that it will be near the face of the patient and still far enough off so that it will not excite inflammation. Both hands are by this method free for work. Anesthesia can be maintained as long as you please, so that you can excise a nerve or perform staphylorraphy. I first experimented with the apparatus on a student who liked the fun of being anesthetized, and I maintained the condition as long as I pleased. Twice since that I have done quite extended surgical operations in the mouth, and maintained the anesthesia successfully. In the latter cases I induced anesthesia by the older methods, and then maintained it with this method. In one case I found the anesthesia so deep that I was obliged to reduce the strength of the vapor to prevent too profound effects. I believe this to be a great advance in the matter of anesthetizing patients for operations in the mouth. The objection might be raised that the operator himself would be affected by the ether which permeates the air. I can only say I have experienced no difficulty in that direction.—*Extract International.*

Hartman (J.) on The Disinfection of Children's Mouths.—It is well known how exceedingly difficult it is to get children to rinse out their mouths, and especially to gargle. I have endeavored to help in this bad condition of affairs and sought to supply a substitute more agreeable for rinsing and gargling, and that literally upon the principle:—*Utile cum dulci.*

Pastilles prepared according to the following prescription have quite an agreeable, refreshing taste, and my children take them gladly.

R.	Sacchar.	gramme 200.0
	Ol. Menth. pip.	1.0
	Thymol	.2
	Spirit abs.	2.0
	Succ. Citr. adde fruct. vanillæ.	
M.	Ft. Rotulæ 400.	

If one wishes to sweeten the pastilles a little more add a small quantity of saccharin. If one makes the Rotulæ 5 grammes in weight.

The formula must be:—

R.	Sacchar.	100
	Saccharin	.3—.35
	Thymol	.2 etc. as above.
Fiat Rotulæ		200.

It is therefore taken that Saccharin is 280 times as sugar.

If those pastilles, then, are made ·5 gr. in weight the doctor can arrange according to the age and constitution of the patient, the dose of thymol to be taken; he will only need to say how many thymol pastilles are a dose, which must be slowly dissolved in the mouth.

The presence of sugar does not interfere with thymol, as no fermentation or acid formation takes place.

The mouth and throat of children, as well as of adults, can easily be disinfected by means of these rotulæ so long as the patient can swallow the saliva in which the pastilles may slowly dissolve. I am firmly convinced that the thymol pastilles have great prophylactic value in diseases of the throat, and even perhaps of the whole intestinal tract.—*Extract Deutsche Monaischrift fur Zahnheilkunde.*

White (Gordon) on the Treatment of Chronic Abscess caused by Diseased Roots.—We are all familiar with the treatment by removing the apex of the root with an ordinary bur. Very frequently the disease extends from one to two-thirds of the root from the apex. A great many of us will amputate the root, and a great many will leave the cavity in the bone to take care of itself. Several years ago, I began the treatment of filling with sterilized sponge this cavity, after having burred out the diseased bone. I have quite a number of these cases which have proved very successful. Of course, every instrument is sterilized and you simply fill the cavity with a little piece of sponge, and I find I have no further trouble.

For sterilization, I depend upon water that has been boiled ; I use water at about 160 or 180°. Just dip your instrument in, and wash with water that has been sterilized by boiling. I dip the instrument in chloroform, which aids somewhat in the sterilization. I then dip it in carbolic acid and proceed with the operation. I cut off the end of the root with an enamel bur that is furnished by Ash & Co. I frequently amputate the entire root of the molars. I have quite a number of lower molars that are doing excellent service, after its entire distal root has been removed at the bifurcation, as a surgeon would take off your finger at the joint. I sterilize the sponge by keeping it in a solution of two grains to the ounce of bichlorid of mercury, at a degree of one hundred and sixty-four, for perhaps half an hour. I got my first ideas of this operation from our grand old friend Dr. Atkinson. I have since been practicing it pretty generally, and my friends in the South know of quite a number of my successful cases. I just dismissed a case a few days before I left home, where I amputated the buccal root of the first superior bicuspid, and filled the cavity with sponge. The patient came in, a few days before I left, and the wound was entirely well. For chronic fistulous openings, where the roots have been filled, I treat them that way almost invariably, particularly if the necrosis is extensive. When the wound is well, the tooth is almost as tight as its neighbor.

Girdwood (Jno.) on English Tube Teeth.—The essayist said the absence of a description of tube teeth in any American work was cause for much surprise to European dentists, as they consider them superior to flat teeth in many cases. He described their several points of advantage as follows:

1st. That they are much stronger than flat teeth, especially for service as masticators, being supported under the whole lower surface.

2d. In easy removal for repairs.

3d. In requiring no backing, thus eliminating the danger of warping the piece.

4th. In being of the same texture throughout so that they can be ground down whenever this is required and polished perfectly.

5th. Their cheapness, owing to their ease of adaptability.

6th. They are a faithful reproduction of the forms of the natural teeth, and consequently, comfortable to the tongue, and are less bulky.

7th. They are more easily kept clean, because backings are done away with, with better supports substituted, which being surrounded by porcelain are out of the reach of any impurity.

For crown and bridge-work they have all the advantages already enumerated, and, in addition, they can be more perfectly and directly fitted to the root than any other form of porcelain crown. They retain when mounted for wear in the mouth, their translucency and natural appearance, so often destroyed by the gold backing.

The essayist described at length the tools required, and the process of mounting these teeth, as single crowns, with or without caps or bands for bridge-work, fixed or removable, etc. In the use of these teeth the pins are cemented in the teeth with molten sulfur, broken teeth being readily removed by the application of a moderate degree of heat. In conclusion, the essayist asked, "What more can an operator wish, when he has presented to him for use a tooth differing essentially from the natural one in but one respect—that it does not live? What more does the patient demand than that having his dental apparatus restored as far as utility is concerned, he is at liberty to laugh and chat to his heart's content, without betraying the fact that he owes his perfect comfort to art? It is no exaggeration to say that in the use of the tube tooth such a happy state of things is realized."

Van Orden (L.) on the Relationship of the Dental Inter-Articulation with more or less Obscure Pains about the Mouth and Jaws.—From a paper on this subject, read at the Congress, we make the following extracts:

The main benefit that the writer has derived from the observation of these and other cases has been the conviction that the extraction of one or more teeth, especially of the inferior first molars, is liable, sooner or later, to lead to discomfort in some of the remaining teeth, and that such discomfort may with patience be located and relieved by the use of an engine stone.

Mrs. B. had been suffering with a slight dull and quite continuous pain in the region of the left superior third molar. Several dentists had been consulted and ascribed such causes as a "slight cavity, too small to fill," and "a dimple" (exostosis). The tooth was slightly sensitive to percussion; the first lower molar was missing and the cup and saucer condition of inter-articulation was noticeable; and, profiting by the previous case, the distal edge of the saucer was reduced and immediate relief was acknowledged.

Mrs. D., aged about twenty-three years, had an exposure of the pulp of the left inferior first molar. which was disclosed upon the removal of a large and defective amalgam filling, pain being present. The pulp was devitalized and the canals medicated and filled. The patient returned, complaining of discomfort. The left superior first molar had been extracted, and as the left superior and inferior molar weres sensitive to percussion, their inter-occlusion was eased and the trouble ceased. It seemed at the time that part of the discomfort was caused by lateral pressure of the left inferior second molar upon the inferior first molar, thus keeping up an irritability of the pericementum of the latter tooth.

Mr. F. M., aged 24 years, had for many months suffered discomfort in mastication with the left superior second molar; an itching sensation in the tooth was also complained of. The patient acknowledged a great sense of relief when the force and direction of the impact had been modified, and has had no return of the symptoms in more than a year. In these models absence of the left inferior first molar is again to be noted.

The foregoing cases have been significantly associated with the loss of one or more teeth through extraction.

Daly (J. A.) on Lining Rubber Plates with Gold.—The lining is pure gold of the thickness of No. 50 or 60 foil, is smooth an one side, and rough or crystalline on the other.

The plaster model must be a correct one, and its surface free from air-bubbles. The case is proceeded with as usual until it is flasked. Where the teeth, or any of them, rest on the gums, they should be invested to remain in the lower part of the flask. *All air-chambers should be made of plaster and free from sharp edges and corners.*

1. Separate the flask; remove wax, etc., preparatory to packing.
2. Varnish the model with sandarac varnish, and allow to dry.
3. Apply a coating of *dammar* varnish, and wait until it becomes very sticky.
4. Cut the gold lining in pieces to suit, and apply it as you would

a postage stamp, allowing each piece of lining to slightly overlap the edge of the other.

5. The brown surface of the lining must be kept perfectly clear of varnish, or it will prevent union.

6. Pack it with small pieces of rubber.

The flask being separated and the wax removed, cut plenty of vents for the surplus rubber to escape, then cover the model with gold lining (the bright side being next the model). Cut into pieces of such shape and size as to avoid creases and wrinkles. If an air-chamber is used, *that* should be covered first, extending about a sixteenth of an inch beyond its margin all around; then lay a strip along the back part of the model, cover the alveolar ridge, extending the lining slightly beyond the edge of the plate, and, finally, the remaining space, and press with some soft substance into all the inequalities. Each piece should slightly overlap the adjoining one. Where there is a depression, the lining should be pressed with a suitably shaped piece of rubber eraser or the finger to the lowest point first, and then fasten. Instruments should never come in contact with the brown side, as they damage the crystals. Where the teeth rest on the gums, pieces of lining can be slipped under the teeth.

Pack in the rubber carefully and exactly, close the flask, and vulcanize. In closing the flask, be careful to bring the two parts together slowly and evenly. After vulcanizing, remove the laps with a burnisher or other blunt instrument in the direction which they run, finish with burnisher and soft brush with a little Spanish whiting.

In repairing broken plates, if any of the lining is cut away, replace it before packing with fresh lining; if none is cut away, nothing need be done.—*Extract Cosmos.*

Beers (W. G.) on Septic Infection from a Bur.—An illustration of the danger of "dirty dentistry" came within my observation the other day. . A young lady in perfect physical health, and whose mouth was as fresh and sweet as a rose in June, was having a lower molar, cervical cavity, prepared by a dentist, who not only used a rickety old engine, but whose burs were so blunt that he had to put on extra pressure to make them cut!

Twice one of the largest burs slipped out of the cavity, tore the gums, and plunging into the mucous folds lying between the tooth and the cheek, revolved there several times before it could be withdrawn. The patient was dismissed after the cavity was filled, without the least attention being paid by the operator to the wound he had inflicted.

About twenty-four hours after the accident the gum in the vicinity became tender and turgid. The face was swollen, the inflammation extending along the inferior maxillary, involving the depressor anguli oris, etc.

The inflammation facilitated the ingress of pathogenic bacteria, which are frequently, if not always, present in the mouth, on the *qui vive* for abrasions and wounds, and the consequences followed, The integrity of the gingival margin had been ruthlessly destroyed by an infected instrument, at a point where the epithelium is composed of more delicate cells than elsewhere. A better invention to infect the muscular folds adjacent could hardly be made than a revolving bur covered with matter for inoculation. The day following I saw the case. To be brief, I made deep incisions directly into and across the place where the bur had entered, with a fine lancet, then syringed fully and freely a four per cent. solution of carbolic acid, as hot as the patient could bear it, and packed the wound with absorbent gauze soaked in the solution. The following day I syringed thoroughly with hydrogen peroxide, which was followed by abundant effervescence. The gauze had kept the wound well open, and the syringing with the peroxide did not, as it might if the orifice was small, distend the tissues and partially close the opening. To accomplish this, the lancing was thoroughly done. The next day I treated the case with pure oil of cinnamon on strips of gauze followed by hot water injection. The patient complained twice of scalding. On the eighth day the normal signs returned; the patient in the meantime had syringed every day with a mild antiseptic wash. What at first appearance seemed to prognosticate a dangerous case of septicæmia disappeared under the treatment. The constitutional disturbances were so severe that the patient lost eleven pounds weight, and though convalescent, is still under the care of the family physician.—*Extract Dom. D. Jour.*

Matheson (L.) on A Case of Fracture of the Maxilla through Removal of the First Permanent Molar.—His patient was a healthy boy, aged 14, for whom it was necessary to extract the left six-year molar. The left upper twelfth-year molar had erupted, but it was not fully in place, the masticating surface being on a level with the surrounding gum. On July 27th, gas was administered, and the anesthesia was complete during the operation, but there was a good deal of unconscious struggling. The sixth-year molar was extracted; it proved to be a tooth firmly set to an unusual degree, and required more than an ordinary amount of force for its removal. At the moment it yielded to the forceps there was a sudden upward jerk of the head, and the tooth gave way, in a manner that suggested the displacement of the labial alveolar wall. The operation had taken so long that there was not time to examine the condition of the parts before consciousness supervened. Whilst the boy was rinsing out the mouth, Mr. Matheson asked him if there was much pain in the socket. "No," he said, "but it feels very lumpy." The bleeding soon ceased, and then Mr. Matheson examined the mouth, as he invariably does after every extraction. The alveolus of the extracted tooth was found intact, but the maxilla was fractured transversely in a line passing between the sixth and twelfth year molars; there was backward displacement to the extent of about an eighth of an inch. The gum around the second molar and covering the tuberosity was blanched by the tension put upon it, and was torn through the line of the fracture for quite half an inch. In consequence of the displacement, the mouth could not be closed, the tuberosity catching against the lower teeth and giving rise to the "lumpy" feeling complained of. Finding that the displaced portion was not easily movable, gas was again given, and by means of strong forward and upward pressure with the fingers, the broken fragment was brought back into position. The articulation was now quite normal, and no discomfort was complained of. Circumstances unfortunately made it impossible for Matheson to see the patient again, so that he could only prescribe an antiseptic wash, and give directions for the case to be carefully watched in the country. No ill results were reported; the gum wounds rapidly healed, and on October 10th, when he saw the case again, firm union appeared to have taken place; everything looked as healthy as possible; there was no trace of the wound in the gum, no symptom of necrosis, and no indication of any antral trouble. Such a result was no doubt satisfactory, but events might not always go so smoothly. The case certainly helped to enforce upon one's mind the necessity for great strictness in using no more violence than is absolutely necessary, and for being prepared for the possibility of such an untoward accident. It also helped to emphasize the importance of invariably making a careful examination of the parts involved after the extraction of a tooth.—*Extract Jour. Brit. D. Asso.*

Hypnotic Suggestion in Dental Practice.—The psychic relationship created between the patient and operator is not above criticism in many, if not all, cases. The suppression of all volitional effort upon the part of the patient and his absolute domination by the will of the operator, is of questionable character upon ethical grounds; this even where the operator is of unquestioned integrity, for it has not been demonstrated that the total surrender of his individuality to the operator is again completely recovered by the patient. This objection applies with multiplied force where the honor of the operator is not without its weak spots, and the temptation to make a wrong use of the temporary control is strong. It is the objections as noted which lead us to, if not condemn the procedure, at least suggest caution in its adoption in dental practice until a better understanding of the subject is had both by dentists and the general public. There can be no doubt of the demoralizing effect it would have at the present time upon the clientele of any dental practitioner, were he to generally publish to his patients his intention to subject them to hypnotism upon occasion, even for the relief of pain.

Thus far our criticism has been applied only to that advanced stage of hypnosis characterized by complete subjection of that portion of the cerebral cortex concerned with volition, and accompanied to a greater or less degree with the phenomena of sleep, anesthesia, and possible catalepsy. There is, on the other hand, an early part or stage of hypnosis wherein certain phenomena are produced by the dynamic function of the suggested idea; these are manifested long before sleep supervenes, with consciousness fully active and volition voluntarily subjected, a state of passivity or non-resistance which can be, and is, daily utilized by dental operators, to the mutual advantage of themselves and their patients. The manner, conversation, poise of character, mental attitude of the operator—all are factors which help to determine the degree of control which it is possible for him to exercise over his patient, and the control thus gained is the result of suggestion, conveyed perhaps unintentionally to the mind of the patient, producing an effect which, if carried further, would lead to hypnosis in certain cases, just as certainly as if the usual hypnotic technique had been employed.

Illustration of the force of suggestion, quite apart from hypnosis, discreetly employed for the control of patients, and the help which it affords them in the endurance of pain, may be found in the experience of all practitioners of dentistry. The qualities denominated force of character, tact, etc., in the management of nervous patients owe their efficacy largely, if not entirely, to the dynamic effectiveness of suggestion. —*Extract Editorial Cosmos.*

D'Argent (M.) on the New Anesthetic, Coryl.—It is a colorless liquid, resembling ether in taste and color. It is obtained by methylation of chloride of ethyl, calculated to bring the boiling point at zero. It is inflammable like chloride of ethyl, is maintained liquid under a pressure of 3 atmospheres, contained in receivers tested at 8 atmospheres for the greatest security. The composition was discovered in the attempt to alleviate the too severe action of chloride of methyl, and to correct the indolent action of chloride of ethyl. It is applied by the coryleur a nickel-plated tube made of special inoxydisable metal, furnished with a cock which works with a precision perfectly regulating the emission of the atomized jet.

The nerve paralyzing effect of coryl is relatively light; for dental operations it is sufficient in the majority of cases. Coryl acts in 15 or 20 seconds.

Before applying coryl, it is necessary to recommend to the patient to breathe through the nose only; let him rinse the mouth with water of the temperature of the operating room; dry the gum, and direct upon it, at the level of the tooth to be extracted, the jet from the coryleur, commencing at the part corresponding to the apex of the root. Congelation is almost instantaneous, when the coryl is maintained at +15°. Pass the jet back and forth over the tooth, from one side to the other, 15 or 20 seconds, sufficient time for the gums and the tooth itself to be coated with ice. The anesthesia is then perfect. For in sufficient effect to render extraction painless, after this first application the mouth should be very quickly rinsed with water, and the coryl applied again; half the time of the first application will now produce the same effect; rinse quickly, and the third application will produce instant congelation the anesthesia is profound and lasts nearly 40 seconds, while the danger of keeping the gum too coated with ice is avoided.

In regard to the general state of the patient, the use of coryl is absolutely without danger, the time of application being too short to excite the least ditcomfort. The mouth should be rinsed with cold water immediately after the operation, in order to prevent too sudden return of the blood to the part congealed. With this precaution, I have never known any desquamation, or even a blister, follow my use of coryl.

In the case of carious and sensitive teeth adjacent, I use hoods of rubber for the latter which I have prepared in different sizes, protecting the carious part first with waxed cotton.

A remedy has long been sought for hyperesthesia of the dentine: one application of coryl, in an aggravated case, calms it to the point permitting excision preparatory to aurification. Coryl can be used to quiet acute inflammation of the gum for puncture and injection of cocain, often as painful as extraction. Better than any other anesthetic it serves in the removal of a sequestrum, while cocain becomes diffused through the pus, or is lost in the disintegrated tissues, acting very imperfectly upon the osseous tissue and the periosteum, retarding cicatrization. Coryl being very antiseptic, begins the sanitary treatment which should follow every operation. It has also hemostatic properties.—*Extract L'Odontalogie.*

Edson (Cyrus) on the Therapeutics of Glycozone, Composition and Characteristics.—Glycozone is defined by its discoverer, Mr. Ch. Marchand, to be a stable compound, resulting from the chemical reaction that takes place when c. p. glycerine is submitted, under certain conditions, to the action of fifteen times its own volume of ozone, under normal atmospheric pressure at a temperature of 0°C.

The necessity of using c. p. glycerine is imperative, as a presence of the water or other foreign matter in the glycerine causes the production in the resulting compound of formic acid, glyceric acid, and other secondary products, that have a harmful effect upon animal tissues.

Glycozone has a pleasant, sweetish taste. Being hydroscopic it must be kept in tightly corked bottles, and, as long as it is kept in this condition, it does not deteriorate at a temperature of even 110 degrees F.

Antagonists and Incompatibles.—Glycozone, like peroxide of hydrogen is a powerful oxidizing agent, although its action is not as rapid or as energetic in this respect as the latter compound. Consequently, we cannot safely prescribe it combined with any other drugs or chemical substances. Contact with metallic utensils decomposes it. We must therefore use glass or hard rubber vessels and syringes when administering it.

Physiological Action.—When taken into the mouth and stomach glycozone causes a feeling of warmth. It excites a flow of saliva and stimulates the gastric secretions. Being hydroscopic it attracts to itself water from the surrounding tissues, but not with sufficient power to effect harm. This property is due solely to the glycerine base which enters into the composition. In very large doses, one or two ounces, it causes a feeling of distress in the epigastrium and is followed by loose, copious, watery stools, which are accompanied by severe cramps.

No effect is noted on the kidneys, the liver or the heart. Glycozone is undoubtedly slowly decomposed in the stomach, ozone being liberated and the glycerine uniting with the water from the tissues. The morbid elements with which it comes in contact probably hasten this decomposition, and in so doing are themselves oxidized and destroyed. The free ozone in the stomach resulting from the decomposition of glycozone aids the digestive process by its presence.

Therapy.—Glocozone is, in the opinion of the writer, the best known agent for the treatment of gastric ulcer. It is also one of the best remedies for the treatment of the stomach, catarrh of chronic alcoholism, and for chronic gastric catarrh from other causes. It is excellent for atonic dyspepsia, and for acid dyspepsia. The writer has seen very gratifying results from its use in these distressing maladies.

External Uses.—After the cleansing of any diseased or suppurating surface by peroxide of hydrogen (medicinal), the application of glycozone stimulates healthy action and hastens the cure. For this purpose it has no superior in the entire range of therapeutics. It tends to check the discharge of irritating unwholesome secretions and to prevent the infection of the sore by pathogenic organisms. Its action in this respect is explained by the fact that it is both powerfully antiseptic and stimulant.

Follicular Pharyngitis, chronic coryza and ulcerative stomatitis are all benefited by frequent applications of glycozone.

Ottolengui (R.) on the Torsion of Teeth.—It is well known that to rotate a tooth in its socket, it is necessary, in some way, to produce a pressure which will act upon one corner in one direction, or else upon both corners in opposite directions. Numerous devices for this purpose have been employed.

My method is to band the teeth with gold, having one or more hooks upon the band, as may be required for the individual case. This band is made very easily. I use pure gold of 28 gauge. Having cut a strip as narrow as possible for my purpose, I bend it approximately to shape with the ends turned up at right angles. This loose open band is slipped over the tooth, and not carried much beyond the cutting-edge. The ends are then caught with the serrated beaks of a pair of pliers, and drawn tightly together, which produces a tight-fitting band, except that as the palatal surface of the central incisor is concave, the band will pass straight across that surface, leaving a space. Later, however, when the band is set with cement, and pressed farther up, so that it impinges upon the bulbous part of the tooth, it becomes more accurately adapted ; the loose ends are united with a tiny bit of solder, and then turned down to form the hook. Where I need two hooks, I begin with two strips soldered together, and when the loose ends are united, I bend both extensions to form my two hooks. The bands are cemented to the teeth, and so are permanently fixed until the rotation is completed. With a central incisor banded in this fashion, if a rubber ligature be thrown over the hook at the anterior labial corner, carried backward and attached to some fixture within the mouth, the anterior corner of the tooth will be carried in. If, however, the ligature attached to the same hook be carried around the palatal side of the tooth, and outward around the posterior corner, to be attached to a fixture outside of the arch, the result will be a rotation which will carry the anterior corner inward and the posterior corner outward at the same time. A similar result obtains when the ligature is hooked on the posterior palatal hook, then carried around the labial surface and inward around the anterior corner, to be attached to a hook within the mouth. The selection of either of these methods would depend upon the class of fixture used—that is, whether there be an external band or not. Next, the posterior corner alone may be affected, by carrying the ligature from the posterior palatal hook outward to a band, carrying the corner out by its action.

The cuspid is probably the most difficult tooth to twist, yet it can be accomplished. I make a gold cap for this tooth, upon which I have my hooks for attachment of rubbers. This cap, like the band for the centrals or laterals, is made at the chair, without recourse to dies or models. I cut my gold into a shape similar to an hour-glass. When doubled by bending across its shortest diameter, we already have an approximate cap. This is slipped over the tooth, and burnished to it, after which the opened edges are soldered together. An accurately fitting cap can be made in a few minutes without going to the laboratory. The hooks are formed of a round wire, the ends being pelted to form knobs, and then soldered across the cap. This allows all the variations of attachment of ligatures and direction of rotation described in connection with the incisors.—*Extract Cosmos.*

Should we Fill Pulp Canals?—In answer to this question, Prof. Delepine replies to Mr. Headridge, England, as follows: I have no special experience regarding the points which you mention in your letter, but considering the question from a general pathological point of view, I would say that very little harm would result from leaving the pulp cavity of a tooth unfilled after carefully removing all decaying matter, and preventing the access of fresh micro-organisms of putrefaction by perfectly sealing the cavity of decay. My reasons for saying so are the following:

The cavity, which I suppose *would have been rendered perfectly aseptic* in most cases, would undoubtedly be filled up after a very short time with a fluid generally called serous, but more like the lymph found in peripheral lymphatic spaces. In this fluid a few blood corpuscles would probably be present. Owing to the stopping, the passage of fluid into the cavity would cease as soon as all the air would have been absorbed. The quantity of fluid would therefore be very small. The solid elements would separate or degenerate, and after a very short time nothing but a thin clear serous fluid would remain in the pulp cavity. This would be the case if no granulation tissue could make its way through the foramen (and from what I know of the structure of teeth such an occurrence is a most unlikely thing. I mean the replacement of the pulp, which has been removed, by granulation tissue). So long, therefore, as the entrance to the pulp canal was well sealed, there would not be much greater chance of septic changes taking place in that small cavity, than if it were further removed from the surface of the body, and the contents of the pulp cavity would therefore not be a source of irritation.

On the other hand, if it is supposed that a few germs have remained in the pulp cavity, and the cavity of decay being perfectly sealed, I believe that these germs, even if anaërobic, will not be a serious source of danger, for they would be under most unfavorable conditions for spreading further. For, 1st, the cavity of the tooth would necessarily have been treated with certain antiseptic substances, which, if unable to destroy all organisms, would probably greatly diminish the vitality of those remaining. 2nd. The total absence of air, and the small amount of fluid not renewed by any circulating process, would be against a full development of these few, somewhat weakened germs. 3rd. Admitting they were able to resist some time, there would be very little chance of their multiplying to any great extent, and still less of their becoming disseminated through the system, unless they were able to find a way out of the pulp cavity through the dentinal tubules, which is most unlikely, as the conditions would be very different from those which occur in ordinary dental caries, and the germs would probably have died from want of nourishment. There would remain the probability of their gradually spreading through the soft tissues occupying the foramen, the few that might reach the surface in this way would probably be rapidly disposed of by phagocytes. The chief danger therefore in leaving the pulp canal empty, seems to me to be the impossibility of sealing permanently the cavity of decay, for if the stopping got at all loose, it is evident that if there was a cavity in the tooth filled with nutritious fluid instead of some non-nutrient stuff, decomposition would go on.—*Brit. Jour.*

Arkövy (Jos.) on a Simplified Method for the Disinfection of Dental Instruments.—For this purpose I filled a glass vessel (length 16, breadth 10, depth 11 c. m.) with coarse building sand which had been sterilized in a hot-air sterilizer for six hours (until it was roasted a deep brown). The disinfecting fluid was then poured upon this sand-bath until it was thoroughly soaked. A sterilized (sublimate) piece of pasteboard or a glass cover rests upon the vessel when not in use. Two centimeters from the top the vessel is left empty. Every instrument, whether a pair of pincers, scissors, scalpel, excavator, mirror, probe, pincettes, or drill, is then pressed into the sand as far as necessary, and passed through it two or three times (sharp instruments, scalpel, etc., with the backs downward). The sand removes mechanically and particles clinging to the instrument. If they have become partly dried, they are dissolved by the dampness of the sand. When specially necessary, the instrument is left standing for some time in the sand. When it is taken out again, it is only necessary to wash off the clinging particles of sand, either in a solution of the same agency or in some other fluid, which can be kept in a preparation-glass (with a ground-glass stopper) beside the sand bath; or instead of this a coarse flannel cloth can be used, in the fibers of which the sand will remain clinging. Instruments which have joints must be freed from sand by a tooth-brush, if it has not all been washed off.

I believe this sand-bath can be used as a means of sterilization at least a month without any danger. Even then the sand would excel the hot-air sterilizer. Where such an apparatus is not at hand, an ordinary dish from the kitchen may be used; this, together with the sand, roasted over the fire or over a strong flame, will fulfill the purpose.

The satisfaction which this method of disinfection has given me has caused me to communicate it to my colleagues in the profession. Perhaps it will meet the wishes of some one.

To the use of the sand-bath as a means of mechanical cleansing was joined a small series of agencies as chemical disinfectants.

Beginning with absolute sterility, we have a series as follows: (1) two per cent. boiling soda solution; (2) four per cent. sublimate solution in sand-bath, with a subsequent washing in chloroform and then in two per cent. sublimate solution; (3) four per cent. sublimate solution without chloroform; (4) concentrated lysol (100 per cent.); (5) fifty per cent. lysol solution; (6) fifty per cent. phenosalyl solution; (7) twenty per cent. phenosalyl solution.

The method proposed here for the disinfection of dental instruments is nearly equal to the method generally used for surgical instruments, and there is no good ground for depreciating it, since the air-bacteria occur in one case as in the other.

None of the methods of disinfecting instruments previously known fulfill to the same extent all of the four requirements—viz: absolute sterility, simplicity, no injury to the instruments, and rapidity; and it remains for the future to perfect a method, possibly by means of electricity, that will with one stroke satisfy the wishes of all.—*Extract Cosmos.*

Van Woert (F. T.) on Pyorrhea Alveolaris.—The disease which proves so fatal is one, I believe, confined to the peridental membrane, brought about by any of the other diseases to which the mouth is subject, and very often by inoculation in the use of instruments imperfectly sterilized, or rubber dam which has been in contact with the exudation from the pockets where the disease was in progress. I feel convinced there are many modes of conveying it from one mouth to another. No doubt many of you will not believe this, but I apprehend the day is not far distant when you will concede it as you have been forced to accept many other theories that seemed quite as ridiculous. My convictions are based upon practical experiment and careful research, and are not a mere fancy, and it will take more than a simple opinion to change my own views.

The loss of the alveoli is, I believe, due to a process of absorption such as takes place after the extraction of a tooth, and is an effort on the part of nature to dispose of that which has ceased to be of service. The weeping of serum from the diseased membrane calcifying upon the roots destroys the union of bone and tooth; and thus the function of the bone at that point becomes a thing of the past, hence, its absorption.

In my method of treatment I begin with the first principles of modern surgery,—that of thorough sterilization of everything connected with the operation and the free use of antiseptics during it. First thoroughly free the teeth and surrounding parts from all food secretions, etc., without lacerating the soft tissues or getting the débris into the pockets; this is done with wheel-brushes on the engine, scalers, strips of orange-wood, and the atomizer, using a three per cent. solution of pyrozone in the latter, and frequent washing of the mouth with a solution of lysol; then, with a Koch's hypodermic syringe, the points of which have been ground smooth so that they will not puncture the gums, I wash the pockets with a five per cent. solution of pyrozone and follow by swabbing, so to speak, with the twenty-five per cent. solution of the same drug. This is accomplished by winding cotton on the points of orange-wood sticks shaped for that purpose, care to be taken in cleansing and sterilizing the hands between each operation. I keep two large finger-bowls on the bracket, filled with antiseptic solutions for freeing the mouth-mirror, instruments, etc., and a good supply of napkins to prevent contamination from contact with any of the removed substances. I next remove as much as possible of the calcareous deposits without encroaching upon, or injury to, the peridental membrane, avoiding the alveolus; then I shape orange wood like chisel scalers, sear the surface in the flame of a spirit-lamp or Bunsen burner, and with this apply a saturated solution of trichloracetic acid, by dipping the points in the acid, and use them as in the act of scaling with steel instruments. The remaining calcareous matter can be softened so that all can be removed. Care should be taken to keep the pockets as free from saliva as possible during this last operation, which, when completed, I am satisfied of the removal of all the deposits; I wash again with the three per cent. pyrozone, applied with the syringe and atomizer.

It is rare that I operate on more than one-half of either the superior or inferior at one sitting, and allowing from six to ten days between each, and where there has been waste enough of the tissues to cause the teeth to be loose after healing I bridge them as recommended by Dr. Rhein.

In conclusion, do not misunderstand this as meaning that I always cure this disease; in fact, I fear I never do, and to the date of this I know of no other treatment that can claim more, notwithstanding the positive declarations by some of the radicals in the old belief. All that I claim is a simple means of controlling the disease sufficient to keep many teeth in the mouth in a comparatively healthy condition long after they would otherwise be lost.—*Extract International.*

Girdwood (J.) on A Potpourri of Practical Hints.—Probably many have experienced annoyance when using the Perry separator on teeth the crowns of which are too short to permit of the bows resting on their cutting-edges or grinding-surfaces. The usual plan in such a difficulty, is to place a piece of wood under each bow, to prevent the separator from setting up on the necks of the teeth and hurting the gum. But by this means it is frequently impossible to fix it securely, and the pieces of wood often become displaced in spite of the greatest care, with painful consequences to patient and operator. To obviate these, I have found the following plan thoroughly effective in securing perfect steadiness, and at the same time allowing of considerable pressure being put upon the separator without danger of displacing it. Take a small piece of sealing-wax, shellac, or modelling compound (the former I prefer), about the size of a bean, soften it till it can be molded between finger and thumb, and quickly apply to the cutting-edge or crown of the tooth, and beneath and around the bow of the separator on each side. In a few moments it will be hard enough to prevent the trouble to which I have referred.

Clamps which like the separator, tend to slip toward the gum can often be fixed in the same way.

In filling labio-cervical or buccal cavities, the slipping of the clamp —but this time off the tooth—is an annoyance which can also be got rid of, for this purpose I employ sealing-wax or modelling compound, the former where only a small quantity is needed. Mold a piece of the material chosen over the tooth on each side of the one to be filled, including that part of the clamp which is clear of the cavity, and you will find it will hold in a way that will surprise you.

Those who practice porcelain inlaying have no doubt often found how difficult it is to grind down and smoothly finish inlays on the approximal surfaces of the teeth, when the space is too small to admit even the thinest corundum disk. The ordinary emery paper disks cut them down wonderfully fast indeed,—almost as fast as they do gold. They are even to be preferred to the corundum wheel on labial and some buccal surfaces when a great deal of grinding is not required, and for fine finishing are superior. For the final polish I use the ordinary cuttle-fish bone.

With regard to crowning teeth, some have no doubt met with cases like the following, where ordinary methods are not available. Miss L. called at my office to have a lower right first bicuspid crowned. There was a considerable portion of the lingual part of the crown standing, the buccal surface being decayed almost to the gum-margin. The coronal portion of the pulp was calcified, and she objected to having it destroyed, nor did I think such a course necessary. Here an all-gold or even porcelain-faced crown would have been too conspicuous, so I decided to apply a Logan crown,—*not*, however with its ordinary pin, but with a cap and collar. I trimmed the root, leaving the lingual side a little high, and took a model and bite of it. A cap and collar were made to fit the root accurately and *tightly*. A suitable Logan crown was next selected, and the pin cut off. Into the countersink and around the stump of the pin I flowed pure gold, and then proceeded to fit the crown to cap and bite. A hole was next cut in the cap, and enlarged till it nearly corresponded in size to the gold base in the countersink of the crown. Cap and crown were now waxed together, and invested crown downward in plaster and marble-dust. This left the interior of the cap and band exposed, and through the aperture in the former all except the edge of the pure gold could be seen. The wax was then removed and the whole soldered. A slight groove was cut around the remaining portion of the root to assist retention, and the crown was cemented in place.

In regulating teeth, it is sometimes necessary to use a rubber band in conjunction with a plate for drawing in an outstanding tooth. To get the required degree of tension, and yet prevent the band from slipping up and injuring the gum (as it is too apt to do), is often no easy matter. The following plan will be found to prevent this. Make a plate, thicken it a little behind the tooth to be moved, and cut it away to allow of the tooth's being drawn into place. Drill two holes about one-sixteenth of an inch apart in the thickened portion. Next cut a strip of rubber-dam about one-quarter of an inch wide, and tapered to a point at each end; thread these through the holes in the plate. Now tie a silk ligature round the middle of the tooth, making a knot in the center of the labial surface and leaving the ends long enough to tie the rubber with; then slightly soaping the rubber strip, pass the ends between the outstanding tooth and its neighbors on each side, and having drawn them sufficiently tight, tie in a single knot, also on the labial surface. Hold it here, and get an assistant to tie the silk ligature lightly round the rubber knot, and having done so cut rubber and ligature off short.

In crown work, when taking a small impression and bite in plaster, done usually at one mixing by placing it over and around the root and making the patient close the jaws to secure the bite, I find that if the bite be very close, or there be any undercut, the plaster is apt to be very badly fractured in removing from the mouth, and the fragments are often very difficult to replace. In such cases, take a few threads of cotton wool, and having cut them fine with scissors, put a small quantity in the water before adding the plaster and mixing. A small quantity only should be used, otherwise the cotton will mat together in a lump. The cotton binds the plaster together, and the impression usually comes away without fracturing. Should it fracture, the separation of the pieces is so slight that they are easily pushed together.—*Extract Cosmos.*

CORRESPONDENCE.

INTERESTING NOTES FROM CHICAGO.

SINCE the great meeting of last summer, the dentists of Chicago have reacted to a certain extent. The energy and work required to make a success of the "Congress," together with other domestic and social duties in connection with the "Columbian Exposition," caused the dental circles of this city to remain comparatively passive for a time. Now that they have had the needed rest, the members of most of the societies have taken a new lease of life and are putting forth greater efforts than ever toward good solid work. Fresher and more thoughtful papers have been the result, and the listening members of the societies have been quickened into more prompt attendance. The Chicago Dental Society, the oldest organization, has in all probability done the best work, although this work has been mostly reminiscent, consisting of studies of the work of the "Congress," and its probable effect upon the local body and the profession at large. The result of such study has been that of a greater appreciation of this great summer meeting. Many points were brought out in the papers and discussions which many of the members had failed to obtain, not from any lack of observation, but because of their inability to occupy several places at the same time. Again, the thoughts suggested by the papers of the congress, developed other lines of thought which were well treated by the essayists.

The Odontographic, the society of young men, has manifested an extremely energetic disposition. Its membership has increased until now it is the largest society in the city. At its last meeting, held January 8th, which was its annual meeting and dinner, an unusually interesting program was rendered, a bright yet earnest address was made by Mr. C. Porter Johnson, one of the leading young attorneys of the city; some original poems were recited by Dr. C. N. Johnson, which led some wag to remark that the Johnson family had returned from the "Fair;" and a stereopticon lecture by Dr. E. H. Angle, of Minneapolis, on "The Evolution of Mechanical Principles in the

Treatment of Fractures of the Maxillæ." His lecture consisted of a very complete resumé of the various methods adopted at different times in the treatment of this injury from the time of Hippocrates, who had used an appliance of his own invention for this purpose, down to our own time, by means of illustrations, finally giving a brief description of his own simple method of treatment. This consisted in holding the teeth of the superior and inferior maxillæ in apposition, by means of German-silver bands attached to a few of the opposing teeth, and fastened together by strands of fine copper wire.

This society, in its program for the coming year, gives promise of increased usefulness.

One society, the Chicago Dental Club, however, seems to have failed in any reaction from the effects of the summer's work. Its members are seriously considering its disorganization. This society has done such excellent work in the past that its members can hardly afford to permit it to sink into "innocuous desuetude," and it is sincerely hoped that some revivifying influence may be set at work at an early date.

The colleges of Chicago seem to have been outdoing themselves too. The Chicago College has completed its new building on the "West Side," and is occupying it. The faculty and students are enjoying their new home immensely, and claim to have one of the best, if not the best dental college building, in the United States. The Northwestern University Dental School also has some new and very complete rooms in the new medical building of the Northwestern University, to which they point with considerable pride. The faculty are much elated over the increase in attendance and in the grade of the students who have applied for admission this year.

The American College, with several prominent additions to its faculty, has sought more extensive surroundings and is congratulating itself on its increased growth. Its increase in attendance has been phenomenal. The number of students has more than doubled, making a total of 278, and this in a year of scarce money.

One member of the profession in Chicago has been distinguishing himself in other fields besides that of dental literature. A novel, the scene of which is laid on Canadian soil, is the product of his pen. The press notices must be exceedingly gratifying to the author, for good things have been said about the book all along the line. Chicago dentists will not permit themselves to be outdone by New York, even in the matter of authorship of novels.

With the new year the *Review* changed its editorial head, Dr. Harlan, who for seven years has controlled its policy, stepped out, and Dr. C. N. Johnson, his associate, assumed the responsibility. During the past seven years the management of this journal has been marked by unusual strength. Dr. Harlan's individuality has left a deep impress upon the character of this journal and one which will not soon pass away. Dr. Johnson in assuming the editorial chair takes no new role upon himself. His editorials have always been pleasing features in the past issues, and now the profession expect still greater things from him.

The bright, cheerful ring of the January number of the Ohio Journal is very pleasing in these times of financial depression. This number is full of good things and if it is the forerunner of others during the year, the subscribers should feel amply repaid for their investment. Anon.

EDITOR'S NOTES.

SELECTING AND KEEPING DENTAL MEDICINES.

While there may be many other things to modify the action of drugs, or the result of their application, we believe that many times negative results come through the use of inferior medicaments.

In the first place there are many impure drugs in the market, especially in the smaller towns; drugs that are either adulterated or have undergone a change from exposure or long keeping.

On the other hand we may obtain pure drugs but allow them to deteriorate through improper care, so that their efficacy is greatly modified.

Some of the dental medicaments that have been found adulterated are:—

Arsenious Acid, adulterated with lime salts, chalk and other substances.

Creasote. It is very difficult to obtain a pure beech wood creasote. Much of the so called creasote has been found to consist of crude carbolic acid to which has been added creasole and phosole.

Essential Oils; often adulterated with fixed oils, oil of turpentine, chloroform, alcohol, or essential oils of an inferior grade mixed with those of a better quality.

Aconite tincture. This is one of the most uncertain remedies in regard to strength, that we use. The commercial article may be strong, weak or sometimes almost inert. This variation is due to varying quantities of the alkaloid used in its preparation. That prepared from the root is many times more powerful than that prepared from the leaves. The officinal tincture U. S. P. contains 40 per cent. aconite strength; Fleming's tincture has 79 per cent.; the German 10 per cent; the British 16 per cent.; the French 20 per cent.; so that care should be used in the selection and use of this remedy.

Terebene, as found in the shops, is often contaminated with resin, turpentine, etc.

Cocain salts, may contain organic or other impurities.

Zinc salts. These may contain impurities of lead, copper, iron, aluminum or alkaline earths.

Hydrogen peroxid has been found to contain varying quantities of sulphuric or hydrochloric acids, some samples contain also boric acid and barium.

Prof. H. E. Smith, of Yale College, made a test of some fifty samples of peroxid of hydrogen obtained from as many different stores in New York, New Haven, Hartford and Bridgeport, to determine the quality of this article as dispensed in small amounts. The samples were collected in one ounce glass stoppered bottles and tested within twenty-four hours after purchasing.

The commercial is supposed to be a 15 volume solution; that is one which yields fifteen times its own volume of oxygen gas.

The results of these experiments was that 56 per cent. of the samples contained from 7 to 9 volumes of oxygen, 8 per cent. contained no hydrogen peroxid and the remaining 36 per cent. were regarded deficient inasmuch as they contained less than two per cent.

Regarding acidity, a good reaction for hydrochloric acid was obtained in thirty-three samples and for sulphuric acid in twelve. Sometimes one only was present, sometimes both. Boric acid was present in small amounts in eighteen cases, and barium in two. These acids are either residues from the process of manufacture or they are added with a view of giving greater stability to the preparations. From whatever cause they are objectionable impurities.

To obtain the best results from medication it is necassary to have the purest drugs; hence the necessity of securing those of the most reliable makes, and in original packages from the manufacturer, unless they can be secured fresh from a reliable druggist.

Now while it is important to obtain pure drugs it is equally important to preserve them in this state. Many drugs deteriorate in quality if proper precautions are not used for their preservation. Dental medicines are particularly prone to do so for the dentist uses the majority of drugs so slowly that a supply will last him much longer than the physician. So the care of drugs is a very important factor in their preservation. In way of illustration we will enumerate a few that deteriorate if not properly cared for.

From the above analysis of hydrogen peroxid we see that there is a considerable and variable difference in the quality of the solutions, even in those of the same make at different times, and the quality is roughly indicated by the differing tendency to spontaneous decomposition in different bottles.

The purer the solution the less liable is it to decompose, and this is in a degree independent of the strength of the solution and the temperature at which it is kept.

Solutions of the commercial article however, are very unstable and should be kept in glass stoppered bottles, protected from light and heat. Hydrogen peroxid, ordinarily obtained, gives up a part of its oxygen at a temperature of about 34° F. and the amount is increased in proportion as the temperature is raised. Hence the necessity of keeping in a cool place, such as an ice chest or water cooler.

Among other drugs used in dentistry that are affected by light, heat or exposure may be mentioned—

Bichlorid of mercury solutions.—They are gradually decomposed on exposure to light or in contact with organic matter.

Aristol is decomposed by exposure to light and moisture.

Europhen is affected in the same manner.

Dialyzed iron is affected by age; thickens, etc.; the solution not remaining potent after being kept for five or six months.

Amyl nitrate is a very volatile liquid, and its alcoholic solutions rapidly deteriorate.

Myrtol evaporates at ordinary temperatures.

Iodine slowly volatilizes at ordinary temperatures if exposed to light and air.

Eugenol, exposed to the air, becomes darker in color and resinous.

Terebene, if exposed to the air, absorbs oxygen and is changed.

Cocain solutions are unstable and soon decompose on exposure to light.

Tannic acid, exposed to moist air, gradually changes; and aqueous solutions, when exposed to air, mould, ferment and are converted into gallic acid.

Permanganate of potassium, in the presence of moisture, gives up the oxygen it contains and becomes binoxid of manganese.

Essential oils, if pure, are not affected by exposure, but those ordinarily obtained thicken and become resinous on exposure to air.

Ethyl chlorid is volatile at the ordinary temperature.

Nitrate of silver is somewhat affected by exposure to light and air.

Glacial phosphoric acid, if exposed to air, absorbs moisture and is changed in consistency.

Sulphate of zinc is slowly effervescent in dry air.

Aqua ammonia, if exposed to air, readily deteriorates.

Thus we realize the necessity of keeping medicaments in well-stoppered bottles and in a dark, dry and cool place to preserve them. If we are careless in this matter and allow our drugs to deteriorate, we cannot expect satisfactory results from their use.

DROPS *VS.* MINIMS.

The terms *gtt.* and *m.* are often used synonymously and interchangeably when in many instances there is a wide difference between them.

A *drop* is usually considered a *minim*, or one-sixtieth part of a fluid drachm. This is true of water and some other liquids; yet drops of the same liquid vary under different circumstances

Let us enumerate a few of the things that modify the size of drops. Specific gravity is one. The heavier the liquid the smaller the drop, and the greater the number in a given measure. For instance, a drop of chloroform, which is a very heavy liquid, is small; smaller than one of ether or alcohol. Again, the shape of bottle, or other container, modifies the size of the drops; those from a thick-lipped bottle being larger than those from one with thin lips. The broader the surface from which drops fall the greater their size. Drops from a full bottle are usually smaller than from a bottle partially emptied, owing to rapidity of movement.

Viscidity, or adhesiveness of the liquid to the sides of the bottle, requiring, as it does, a greater mass to overcome it, augments the size of the drop.

The greater the mobility of a liquid, the larger the drop.

In measuring liquids by drops, it is best to use a glass medicine dropper and not depend upon the uncertainty of dropping from various shaped bottles.

The following list will serve the purpose of showing the relative difference between drops and minims of a few of the drugs employed by the dentist:

NUMBER OF DROPS IN SIXTY MINIMS.

Carbolic Acid,	111
Sulphuric “	128
“ “ dilute,	60
Aromatic Sulphuric Acid,	146
Ether,	172
Alcohol,	146
“ dilute,	137
Aqua dest.,	60
“ Ammonia,	64
Chloroform (purified)	250
Creasote,	122
Fl. Extract Ergot,	133
Glycerine,	67
Liq. Chloride of Zinc,	89
Oil Cajuput,	134
Oil Cloves,	130
“ Cinnamon,	126
“ Wintergreen,	125
“ Menthe pip,	129
“ Sassafras,	133
“ Terebinthinæ,	136
Aromatic Spirits of Ammonia,	142
Spirits Camphor,	143
Syrups,	65
Tinct. Aconite,	146
“ Benzoin Comp.,	148
“ Digitalis,	128
“ Chloride of Iron,	150
“ Opii,	130
Vin Opii,	100

NEW PUBLICATIONS.

Appointment Book.—Pearson's Vest-Pocket Appointment Book is a standard book conveniently arranged for all requirements. It is so handy that if you use it once you will want it again. Price, 50 cents; with name, 75 cents.

Catching's Compendium for 1893. $2.50. Look out for it! The gist of the practical matter of all the journals for 1893! In its fourth year. Order it now direct from Dr. B. H. Catching. Atlanta, Ga., U. S. It is now being issued.

Polk's Dental Register of the United States is a work that should be seen to be appreciated. Address R. L. Polk & Co., Pub., Detroit, Mich., for information regarding it.

SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY.

The thirtieth annual meeting of the Illinois State Dental Society will be held in the senate chamber, Springfield, Ill., May 8, 9, 10 and 11, 1894. An interesting program is in the course of preparation. Practitioners of Illinois and of adjoining States are cordially invited to attend. Louis Ottofy, *Secretary.*

MIDWINTER DENTAL CONVENTION.

This convention of the Pacific slope will be held at San Francisco, Cal., beginning the second Tuesday in June, 1894. The membership fee is $10, which will entitle any eligible dentist to membership and the transactions.

The American Medical Association meets at the same place one week previous.

ODONTOLOGICAL SOCIETY OF CHICAGO.

At the regular meeting of the Odontological Society of Chicago, held at the Chicago Athletic Club, on Tuesday evening, December 19th, 1893, the following officers were elected for the ensuing year: W. V. B. Ames, president; C. N. Johnson, vice-president; Louis Ottofy, secretary-treasurer; C. S. Case, curator; Board of Censors, P. J. Kester, A. W. Harlan, J. W. Wassell.

Louis Ottofy, *Secretary.*

CLEVELAND DENTAL SOCIETY,

The following officers have been elected for the ensuing year: President, W. H. Whitslar; Vice-President, C. R. Butler; Secretary, J. W. Hisey; Treasurer, J. R. Bell.

BRIEFS.

— To repair a broken gum-block, grind out the broken part and fit a plain tooth neatly.—*D. V. Beacock.*

— Many coat cement fillings with sandarac or shellac varnish; but the alcoholic constituent penetrates deeper than could the saliva and does more harm than good.— *W. Belcher.*

— Dr. Geo. Evans uses gutta-percha and oxyphosphate combined, as a setting material, so as to allow collar crowns with posts to be easily removed by application of heat, which is a great advantage in bridge-work.

— Referring generally to all kinds of impressions, a difficulty is sometimes experienced in removing them from the mouth owing to suction. In this case request the patient to cough slightly. The effort will elevate the soft palate letting the air between, rendering the removal no longer difficult.—*F. Molloy.*

— Often after a black rubber plate is polished, it presents a very inferior color—a grayish black. This may be removed by the application of carbon bisulphide. Dampen a cloth with the solution and rub the plate vigorously wherever required. It is well to wash the daubing thoroughly after the use of this solution, as there might otherwise be a tendency to nausea,—*S. Burns.*

— In repairing broken porcelains in bridge-work, without soldering, Dr. T. A. Bryant drills holes through the backing from the front, and countersinks the palatal surface; then, with a special instrument a screw thread is cut upon the pins of the porcelain facing, and the same securely held, when placed in position, by nuts on the countersunk side.

— Coffee is recommended in the *Revista Med. de Revilla,* as an efficacious preventative of contagious diseases. A number of observations, especially those of German writers, have confirmed this fact. It is to be taken on an empty stomach. In Germany it has been remarked that persons who were accustomed to take coffee fasting in the morning were not attacked by the cholera, typhoid fever and other similar affections, while the few who did had only a benign form, with a mortality of six per cent.

— Dr. Daniel E. Morse exhibited and demonstrated the use of his mitering angle gum tooth-jointing instrument, and gave the following description of it: "The method consists in removing the gum sections from the model in the relative positions they occupied thereon, and securing them by means of heated paraffin and wax to the mitering instrument. The sides of the separate blocks designed to come in apposition are ground on the sides of a corundum wheel at the same time and at the same angle, and a true joint thus formed, one that touches front and back, leaving no V-shaped space." Dr. Morse exhibited his improved displacement gauge for measuring rubber and other substances. It is called the "exact displacement gauge," and is so sensitive that the addition of a few drops of water will be registered.—*Cosmos.*

OUR AFTERMATH.

The Cleveland University of Medicine and Surgery, is the new name substituted for the old Homœopathic Hospital College.

A New Dental College.—The Tacoma College of Dentistry is the name of the new school recently started at Tacoma, Washington.

More Thorough Preliminary Education Required.—The College of Dentistry, University of California, now requires a more thorough preliminary education of applicants. An examination in Latin is among the new requirements.

Higher Education Desirable.—It does not need much discernment to discover that to-day a high standard of preliminary education is desirable for entrance to the liberal professions. We wish dentistry to rise to this rank. No matter to what extent we extend the curriculum of scientific and practical study, we simply make it ridiculous if we do not exact some much higher preliminary standard than a common school education. It is no reproach to dentistry in the past that we have good operators who could not pass even the examination of a common school, much less that of a university; but few of these men are prepared to defend such ignorance as a passport to the profession to-day.—*L. D. S., Dom. Jour.*

EDITORIAL CHANGE.—Dr. A. W. Harlan has severed his connection with the *Dental Review* and retired from the editorial tripod. Dr. Harlan's editorial ability has been widely recognized and we personally dislike to see him leave the ranks of dental journalism, but if it must be so, we take pleasure in welcoming his successor, Dr. C. N. Johnson, to the brotherhood of the "haunted and cursed." The work of Dr. Johnson, as associate editor of the *Review* has shown him to be a man of superior ability, well fitted for the position he has now assumed. The selection of Dr. Geo. J. Dennis, as associate editor, with Dr. Gilmer, shows good judgment on the part of the managers. Dr. Dennis is a young man of ability, capable in every respect of filling this position creditably. May the *Review's* prosperity continue.

HIGHER MEDICAL EDUCATION.—In pursuance of the policy recently announced in the resolution to be presented to the American Medical College Association, the Trustees and Faculty of Rush Medical College have decided to require four years attendance at college from students who begin the study of medicine this year with a view to graduation in 1898; however, those who have already studied medicine one year or more with a preceptor, so that the four years of study, already required, will be completed before July, 1897, may graduate after three courses of lectures as heretofore. To encourage proper preliminary study, graduates in Arts and Sciences, from high grade colleges, and graduates in Pharmacy and Dentistry, from colleges requiring a proper amount of money and two full courses of lectures will, until further notice; be allowed to graduate after an attendance on only three courses of lectures.

DECAY OF BOOKS.—M. Delisle, the principal librarian at the Bibliotheque Nationale in Paris, warns us that our modern literature is destined to perish. Of the 2,000 and odd volumes published annually in France, not one, he thinks, will remain after a certain time. Cheap paper is a splendid thing in its way, but this is the price we must pay for it. Old fashioned paper made from rags has stood the test of hundreds of years, as the many fine specimens of fifteenth-century printing show, to say nothing of still earlier books in manuscript. Nowadays, however, paper is made of all sorts of material of a more or less perishable character. In particular, as M. Delisle points out, books printed on paper made from wood pulp soon begin to rot away. At first the pages are covered by yellow spots, and these are replaced in course of time by holes. Even so-called hand-made papers are often no more durable, being treated with chemicals that slowly destroy them.—*London Daily News.*

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CONTRIBUTIONS.

SOME POINTS ON THE ARTICULATION OF TEETH.*

BY GRANT MOLYNEAUX, D.D.S., CINCINNATI, O.

THE downfall of mechanical dentistry has been attributed to two causes, viz. The introduction of vulcanite for artificial dentures, and nitrous oxide gas. The deplorable condition into which mechanical dentistry has fallen through vulcanite is not due so much to the fact that vulcanite as a base for artificial dentures is bad, for it is not, but from the fact of the ease of manipulating this material a large number have entered this profession who are entirely oblivious to anything more than jewelry work, losing sight entirely of the essential features—those features which make a denture of the greatest utility and beauty.

Of the many offices of the natural teeth there is none of greater importance than the mastication of the food. The thorough exercise of the teeth in mastication has been deemed a necessary concomitant to the process of digestion, and it is necessary, in order to maintain the health and comfort of the digestive organs, that this function should be thoroughly performed. If in the insertion of an artificial denture we fail to provide a means for the thorough mastication of the food, so far as practical in each case, our instrument is virtually a failure. The means for properly masticating the food infers a perfect articulation of the teeth; not only the articulation of the teeth

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* Read before the Ohio State Dental Society, December, 1893.

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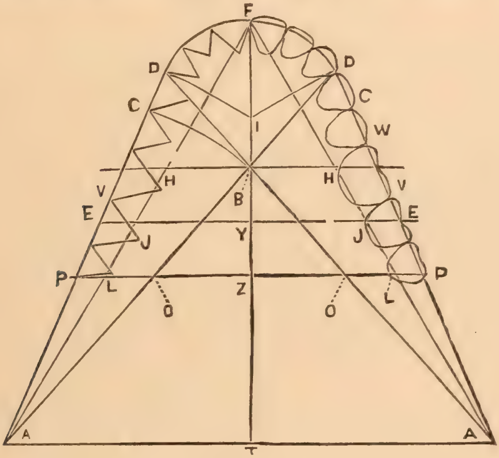
during the occlusion of the jaws, but also during the various movements of the lower jaw in the acts of incising and grinding the food. The lower jaw on account of the peculiar form and movements has the power of bringing the teeth into various relations to each other, for the purpose, first, of incising the food, when both condyles of the lower jaw move forward in the glenoid fossæ, and the cutting edges of the incisor teeth are brought opposite each other for the purpose of separating a small portion of food from the main bulk prior to the process of mastication.

During mastication instead of moving both condyles, one condyle only moves forward in the glenoid fossa, protruding the lower jaw either to one side or the other, and this lateral protrusion followed by a drawing of the jaw back into the position of occlusion is a provision whereby the cusps of the bicuspid and molar and teeth, if they are in proper relation to each other, can be utilized for the trituration of the food. It is an impossibility for the human race to masticate upon both sides of the mouth at the same time, and yet I have heard many practitioners in explaining to patients how to use an artificial denture, when they complain of tilting of the plates, that they must learn to chew on both sides at the same time.

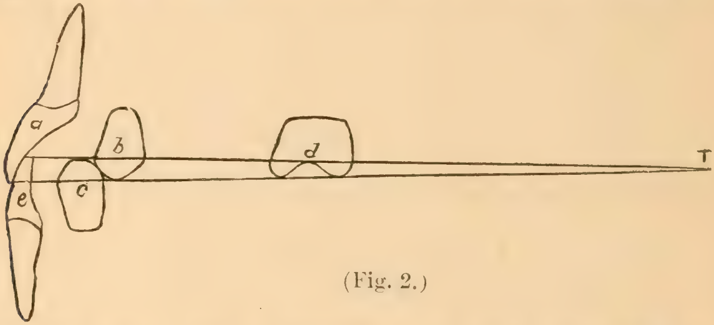
It is a fact owing to careless methods in vogue, that the movements of the lower jaw for the purpose of mastication with a large per cent. of artificial dentures is restricted simply to the up and down movement, or the same movement as in occlusion, and when the patient learns to control the lower jaw and make only the movements of occlusion they only then begin to feel that the denture is a success. By such movement of the jaw instead of mastication the patient is limited to only a mashing of the food and the swallowing without the proper insalivation which occurs during the free and unrestricted use of the lower jaw. Now, to construct an artificial denture that will permit of the free and unrestricted use of the lower jaw, several points must be carefully considered, and these cannot be better presented than in the language of the author of a system of articulating artificial teeth, which I am expected to demonstrate this evening. Dr. Bonwill, in an article entitled "The Geometrical and Mechanical Laws of the Articulation of the Human Teeth," found in *The American System of Dentistry, pages* 496 *to* 498 *inclusive*, calls attention to a few conditions which he says exist in every normally articulated natural denture, and with a special apparatus of his own invention called "The Anatomical Articulator," he applies his conclusions to the arrangement of artificial teeth. His first important observation is with reference to the shape of the lower jaw. It being of a peculiar tri-pod arrangement and forming an equi-lateral triangle. "From the center of the condyle to the center of the other, four inches is about the average and it will also be found from the center of each condyloid process to the median line at a point where the inferior centrals touch at the cutting edge is also four inches." These angles he claims vary never more than half an inch, which would make little difference in describing the arc of a circle. "No matter



(Fig. 1.)

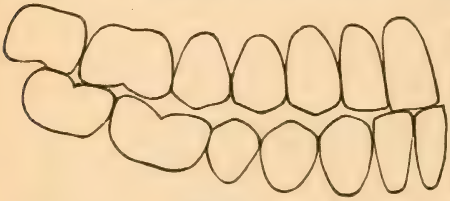
what the width from one condyloid process to the opposite process the distance is the same from the processes to the median line of the lower jaw at the cutting edges of the central incisor teeth." "The jaw forms a perfect triangle for the purpose of bringing into contact the largest amount of grinding surfaces of the bicuspids and molars, and at the same time have the incisors on one side at once come into action during these lateral movements."

"It will also be found that from the cuspids, the bicuspids and molars run in nearly a straight line, (Fig. 1) instead of a circular one, back toward the condyloid process, enabling them to keep the largest amount of surface always presented for mastication." The next important observation has reference to the position and relation of the incisor teeth." The upper incisors should overjet the lower incisors while the lower have a corresponding under bite; without this arrangement the incisor teeth would lose their function. Were the incisors to strike directly upon each other the power to cut off food would be very much lessened. The normal arrangement of the incisor teeth is shown in Fig. 2. Now where there is an over bite and an under bite of the incisor teeth, just in proportion to their depth will be the length of the cusps of the cuspids, bicuspids and molars."

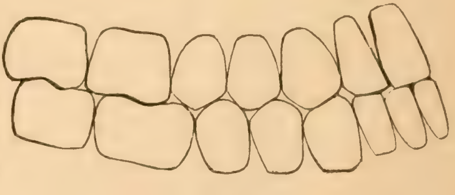


(Fig. 2.)

The next observation has reference to the curvature of the teeth in the jaw, which is formed by the dipping down of the second bicuspid and shortening of the posterior cusp with a turning upward of the second and first molar teeth towards the condyle of the jaw, as illustrated in Fig. 3, and is also illustrated in Fig. 4, which is reproduced from a life size engraving from *Black's Dental Anatomy.*—This vertical curvature "commences at the first molar tooth, although it shows itself slightly at the bicuspid; practically it need only commence at the first molar, and this curvature is proportioned to the under bite and over bite of the incisor teeth."

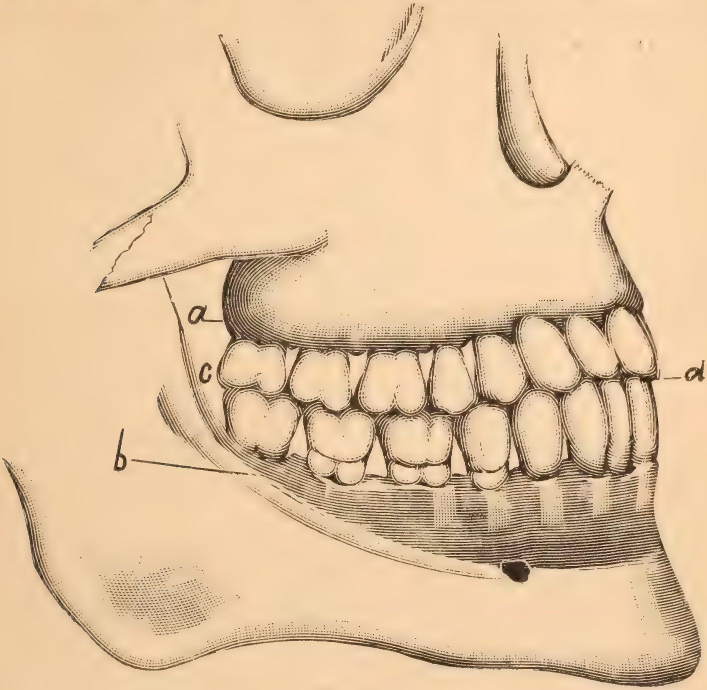


(Fig. 3.)



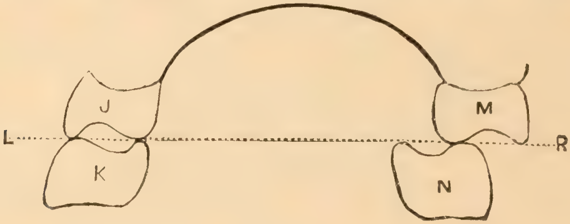
(Fig. 5.)

The purpose of this curvature at the ramus, as shown in Fig. 3 and Fig. 5, is obvious; when the lower jaw is protruded during the incisive function the molar teeth are in contact at the same time as the cutting edge of the incisor teeth, while the cuspids and bicuspids swing free. This prevents anything more



(Fig. 4.)

than mere contact of the incisor teeth, and applying the principle to the arrangement of artificial teeth it established contact at the heel of the plate at the same time the incisor teeth strike, and prevents the displacement of the denture. The length of the cusps of the bicuspid and molar teeth has a definite relation to the lateral movement of the lower jaw. The buccal cusps of the lower bicuspid and molar teeth are usually shorter than the lingual cusps, while the reverse is true of the upper bicuspids and molars. The purpose of this arrangement can be easily seen by referring to Fig. 9. When the lower jaw is protruded to the left side, as in the figure, and mastication is being performed on the left side of the mouth, the cusps, both the lingual and buccal, are found opposite each other while the food is pressed into the sulcus between these cusps. Now, if there is no contact upon the opposite side of the mouth the plate would be in great danger of tilting or dropping on the side opposite the one in use. But, by the proper shaping of the cusps of the bicuspids and molars we find that we can obtain upon the opposite side of the mouth contact between the lingual cusps of the upper molar teeth and buccal cusps of the lower molars, which prevents displacement of the denture opposite the side in action. As the lower jaw is drawn into position the buccal cusps of the lower molars traveling into the sulcus and towards the lingual cusps of the upper molars on the side in use, we find the buccal cusp of the opposite lower molar traveling towards the buccal cusp of the upper molar on the side not in use, keeping a constant contact for the purpose of supporting the denture upon that side of the mouth during mastication on the opposite side.



(Fig. 9.)

The same principle holds good when mastication is performed on either side of the mouth.

Fig. 10 shows the position of molars and bicuspids during mastication on the right side; Fig. 9 during mastication on the left side, with a balancing contact of the molar teeth on the opposite side of the mouth.

The next observation made by Dr. Bonwill has reference to the relative position and size of the teeth in the arch. This is illustrated in Fig. 1. An equi-lateral triangle is formed with a base corresponding to a line drawn from the center of one condyle of the lower jaw to the center of the opposite condyle, and represented by the points A A in the figure. From the points A A a line is taken to the cutting edge of the central incisor teeth at the median line which represents the apex of the triangle, and it is usually about four inches in length.

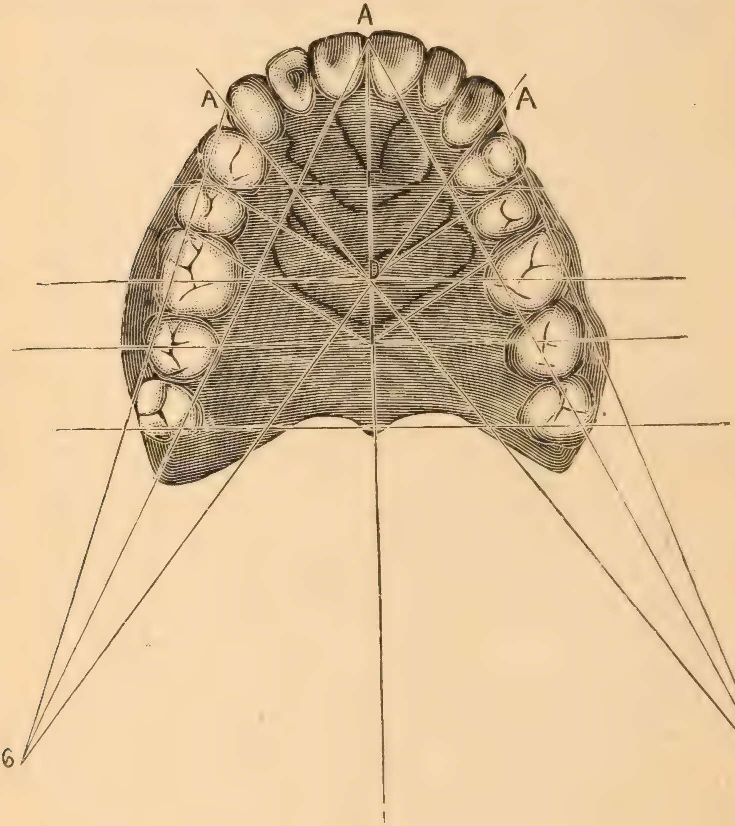
We now take a pair of dividers and obtain the combined width of the superior central, lateral, and cuspid teeth on one side. A line is now drawn from the point "F," or the cutting edge of the superior central incisors at the median line, to a point between the condyles, or midway between the points, A A Fig.

1. This line extends from "F" to "T" in the diagram, and represents the median line of the mouth throughout its entire extent. The point of the dividers is now placed at the cutting edge of the superior centrals at point "F," while the other foot of the divider is placed at point "I" on the median line or just the distance of the width of the superior central, lateral, and cuspid teeth on one side. The point of the divider resting at "I" is held firmly in position while the point of the divider at "F" is made free, and a complete circle described. The anterior segment of this circle which intersects the median line at "F" gives the exact size of the arch as it falls directly upon the cutting edges of the incisor and cuspid teeth. It marks the extreme limit and prominence of the cuspid tooth. If a line be drawn at right angles to the point where this circle intersects the median line at "Y," (or twice the distance of the combined width of the superior central, lateral and cuspid,) from the apex of the triangle it will fall through the center of the second molar tooth. After arranging the six anterior teeth according to the measurements given, a straight line is taken from the condyle of one side of the mouth to the distal surface of the cuspid tooth on the opposite side of the mouth. Another line is drawn from the condyle on the opposite side to the cuspid tooth on the opposite side at its distal surface. These lines intersect the median line at "B." Dr. Bonwill claims that a line drawn at right angles to the median line at the point "B" will fall through the center of the first molar tooth. I would say with reference to this line that its position can be slightly altered according as the width of the incisor teeth is greater or less and also the width of the bicuspid teeth, but the difference is so slight that it makes very little practical difference in the arrangement of an artificial set of teeth. By reference to Fig. 11, which is taken from a life size engraving in *Black's Anatomy*, you will find that the horizontal line falls through the middle of the distal buccal lobe of the first molar tooth instead of through the center of the tooth.

The arrangement as shown in *Black's Anatomy* has been more universal in the measurements that I have made than that shown in Dr. Bonwill's diagram.

We now take our dividers and place one point of the divider at "A," Fig. 1, and the opposite point of the divider at "B," we describe a curve towards the buccal surface of the mouth from

"B," and we find that this gives us a space between the curve and distal surface of the cuspid tooth, which fixes the width of the first bicuspid tooth. We keep one point of the divider at "A," and we retract the other point to "I," we describe a second outward curve, and the space between these curved lines gives the exact width of the second bicuspid tooth. The next line is taken from a point at the distal surface of the cuspid tooth to the condyle of the jaw, which Dr. Bonwill claims will pass through the buccal cusps of the bicuspid and molar teeth.] In every instance that I have made the measurement where I have found the arrangement of the teeth approximating the natural or normal, I have found this line to deviate slightly from the diagram shown by Dr. Bonwill. If we refer again to Fig. 11 we find that the two



(Fig. 11.)

bicuspids and first molars will fall with their buccal cusps upon this line, while the second molar is turned inward towards the median line of the mouth, and is missed entirely by the line from "A" to "C," Fig. 11.

This seems to me to be a more advisable arrangement of artificial teeth, for if the diagram of Dr. Bonwill is followed exactly, the distal buccal cusps of the second molars are thrown too far from the ridge, and there is great danger of excessive leverage at this point, which would not be the case if the second molar was turned towards the median line as shown in Fig. 11.

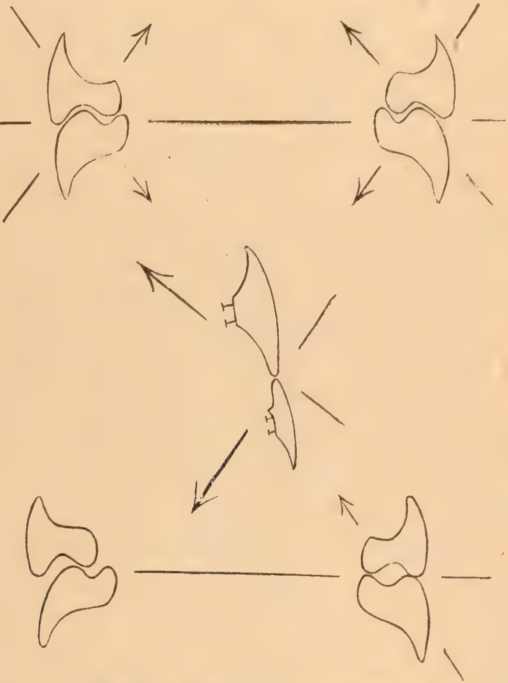
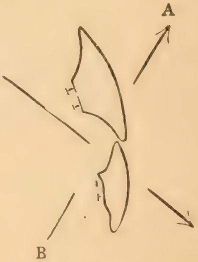

(Fig. 15.)
(Fig. 13.)
(Fig. 10.)

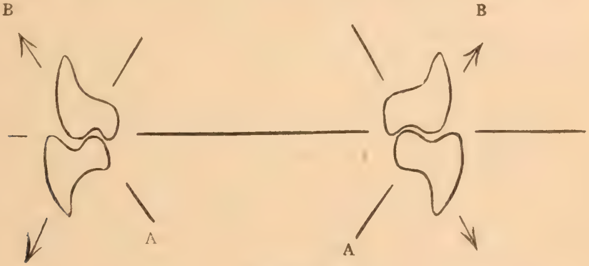
Diagram "A."

With the exception of this tooth and the position of the line which defines the center of the first molar I have found no exception to Dr. Bonwill's measurement. There are some other points in connection with this subject which I desire to make, and which I think are of great importance in the arrangement of artificial teeth. I regret exceedingly that Dr. Bonwill did not have more to say in his article on the articulation of teeth about this point; viz., the angles of force during the act of incising the food and mastication. When teeth are firmly imbedded in the alveolar process and supported by each other, a slight change in the angle of position of these teeth in the process is of very little importance practically, but the angles of the teeth on an artificial denture contribute largely to the successful or unsuccessful use of that denture. The remarks made by Dr. Bonwill have direct application to the support of artificial dentures when the cutting edges of the teeth are in contact or in positive mastication, but there is nothing said about supporting the denture while the food is between the teeth and before the cutting edges strike. It is absolutely necessary to consider the lines of force, or the mechanical forces during the incisive function and during mastication, in order to support the denture before the cutting edges of the teeth come into actual contact. By reference to Diagram "A" I have tried to outline the position of the incisors and bicuspid and molar teeth on opposite sides of the mouth, indicating the lines of pressure during the incisive function and during mastication by darts. In a large number of cases where there is excessive absorption of the ridges it is a rule with a great many operators to lean the cutting edges of the incisor teeth towards the lip while the cervix of the tooth is inclined towards the alveolar ridge. The same is true of the lower incisor teeth and is indicated by Fig. 12. If the mouth is thrown open and there is an attempt to incise with the teeth in this position the pressure from the lower tooth is against the inner or lingual cutting edge of the upper incisor tooth, and the angle of pressure is according to the dart from B to A, which would cause a tilting of the plate at the heel; because there being food between the incisor teeth there is no contact between the molars. The arrangement of this kind, as shown in Fig. 12, would have a tendency as can be seen by the angle of these teeth to displace, by tilting both dentures at the heel. Referring now to Fig. 13 we find that by inclining the cervix of the superior incisor outwards the cutting edge of the inferior incisor inward that the line of pressure is towards the center of the palate above, and against the labial cutting edge of the incisor, thereby supporting the denture during the process of biting through the food. While this arrange-



(Fig. 12.)

ment may not be wholly in accordance with a natural denture, and is slightly exaggerated in the figure, the appearance is much better in an artificial set than the same arrangement might be in the natural teeth. The slight change of these angles does not materially affect the appearance of an artificial denture. If we refer now to Fig. 14, which is an arrangement of the bicuspids and molars that usually accompanies Fig. 12, by the leaning in of the cervix towards the alveolar ridge it can readily be seen that when there is food between the teeth, and pressure is exerted, bringing the lower teeth against the upper that the pressure would be represented by a line from "A" to "B," and this pressure towards the buccal surface would tend to displace the denture upon the opposite side of the mouth. If we refer now to Fig. 15 we see that the cervix is inclined away from the ridge, while the cutting edges are inclined towards the center of the mouth. If the food be now grasped between the teeth arranged according to this diagram the line of force would be as indicated in Fig. 10; the pressure being upon the buccal surface towards the center of the palate, while in the lower it would be towards the median line of the floor of the mouth as indicated by the darts.



(Fig. 14.)

When the jaw is protruded laterally for the purpose of triturating the food it is gradually retracted, drawn upwards and towards the position of occlusion. Now, until the cutting edges of the teeth strike the pressure would be towards and against the lingual cusp of the upper molar in the sulcate groove. It will readily be seen that pressure against this point would support, or tend to support, the denture on the opposite side of the mouth. If the angles of the teeth are arranged properly there will be no displacement of the denture while biting through the food until the cutting edges of the teeth strike; there would be no displacement then unless upon the opposite side of the mouth there was no balancing contact. The real act of mastication occurs after the cutting edges of bicuspids and molars strike, and if at this time we have contact upon the opposite side of the mouth we find that the denture would be constantly supported.

By reference again to Fig. 10 we see the lines of force indicated until the cutting edges of the teeth strike, as the lower jaw is retracted and the buccal cusps of the lower teeth striking the buccal cusps of the upper, the molars and bicuspids begin to travel, the food being pressed in the sulcate groove between the cusps, upwards and towards the position of occlusion, the buccal cusps following into the sulcus of the upper tooth, while the lingual cusps of the lower molar travel over the lingual cusps of the upper molar. During all of this time we find the buccal cusps of the lower molar on the opposite side travelling into the sulcus of the upper molar and towards its buccal cusps, keeping a balancing contact on the side opposite the one in action. These points can be probably more clearly demonstrated by reference to diagram "E," Fig. 6; here is shown a case of lower central incisors and cuspids, with their abrading cutting edges bevelled away from the lingual surface towards the labial side of the tooth. We find that the second molar tooth tilts forward owing to a loss of the first molar and bicuspid teeth. This case, which is taken from nature, and of which I have the model here to illustrate, is not infrequently found in practice. In the case in question, the gentleman has had several dentures made and was unable to use either of them for the reason as shown by the arrangement of the incisor and molar artificial teeth. At every attempt to close the mouth when there was food between the teeth the pressure was against the lingual surface of the superior incisor and towards the lip, while the molar tooth antagonizing with the natural lower tooth was inclined at an angle as illustrated in Fig. 6. It can be readily seen that pressure against the artificial denture in this case is to force it off the ridge; first to tilt it by pressure against the incisor; secondly, to force the denture from the ridge by pressure against the artificial molar. The second denture was constructed after the plan of Fig. 7. Instead of inclining the artificial molar it was placed nearly upon a perpendicular plane, while the cutting edge was sloped away towards the distal surface in order to antagonize the tooth. The arrangement of the incisors in this plate was as indicated in Fig. 7. The upper incisor swinging clear of the lower tooth and allowing the lower incisor teeth to strike against the base plate of the denture. In this case the same conditions would hold as in Fig. 6. The line of force is from the distal portion of the plate towards the front of the mouth, and the denture was constantly thrown off of the ridge. The manner after which we constructed our appliance and one which has been worn quite successfully is shown in Fig. 8. The long projecting inner extension of the lingual surface of the incisor was ground away as indicated in Fig. 8. It is impossible and quite unnatural to adjust an artificial denture with an overbite and with cusps in such a case as illustrated in Fig. 8. The cutting edge of the lower natural incisors was slightly grooved as shown by the Fig., while the molar tooth, the first superior molar artificial, was arranged practically the same as shown in Fig. 7, but in addition to this we arranged the second molar upon the denture, bringing a bearing against the distal

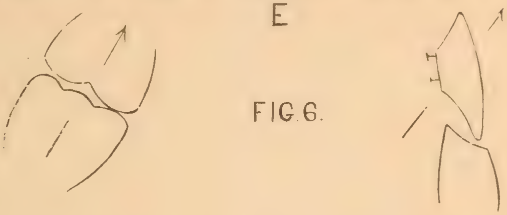


FIG. 6.

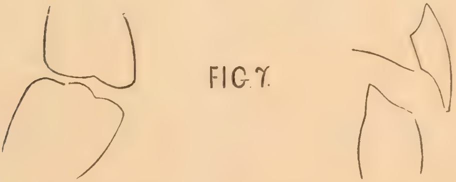


FIG. 7.

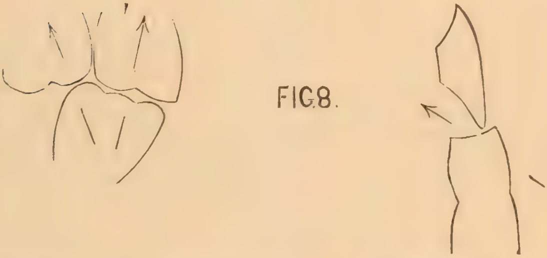


FIG. 8.

surface of the lower natural molar. The provision of this arrangement is quite obvious; during biting upon the front teeth the line of pressure was against the labial cutting edge and towards the center of the palate as shown by the darts, and while the denture was thus supported anteriorly at the same time of occlusion in the region of the molars we find the pressure exerted in both directions, and by the tilting of the second molar against the distal surface of the lower natural molar we find the pressure exerted in a manner that would hold the denture firmly against the ridge and prevent its displacement. It is a strange feature that a subject of so great importance has been so long neglected in the literature of mechanical dentistry. The article of Dr. Bonwill's on this subject, "On the Articulation of Artificial Teeth," is the first and only literature of any scientific merit in this direction, and after an experience of over six years carefully following his methods of articulating artificial teeth, we are prepared to state that our results have been universally satisfactory. If we expect to recover from the present state into which mechanical dentistry has fallen it must be by the study and adoption of such theories as advanced by Dr. Bonwill. While there may be some criticism as to the conclusions upon the observations he has made, the profession is certainly deeply indebted for such a perfect guide to the articulation of artificial teeth. The subject is of too great importance to be passed without serious consideration, and the moment the intelligent part of the dental profession begin to adopt and apply, carefully, such methods, or require their mechanics to adopt them, they will at once raise the status of the prosthetic art and a mechanical dentist will be recognized as a scientific man.

With the observations before us it remains to adopt some apparatus by which we can study and obtain the various movements of the lower jaw out of the mouth. As we have seen by the preceding observations that the over-bite of the incisor teeth, the position of the teeth in the arch, the vertical curvature in the bicuspid and molar region, the length of the cusps, all have a definite relation to each other and cannot be followed abstractedly. One cannot hope to carry out the provisions of this articulation without having the means of actual measurement. We have the vertical curvature in the molar region. Of what service is this curvature unless proportioned properly to the over-bite? If we place the incisor teeth, as many operators do, with a very slight over-lap, "or only enough to prevent hissing," as the book tells us, we at once sacrifice to a large extent the incisive function of the incisor teeth; not only this, but the appearance of the incisor teeth is quite natural. If the incisor teeth are arranged regardless of the position of the molars, and the natural amount of over-lap given, then lateral movements of the jaw will be interfered with, and the patient will be restricted simply to the up and down movements of the jaw. We must adopt a means whereby these various conditions can be measured or relatively proportioned out of the mouth, and this cannot be accomplished without being able to obtain the movements of the lower jaw. The only instrument for this purpose is found in the ANATOMICAL ARTICULATOR.

N. B.—Figs. 4 and 11 are reproduced from Dr. Black's "Dental Anatomy." Figs. 1, 2, 3, 5 and 9 are from original drawings of Dr. Bonwill. This article should be preserved as further reference will be made to it.

KNICKKNACKS.*

BY F. E. BATTERSHELL, D.D.S., NEW PHILADELPHIA, O.

DISEASES of the mouth as well as of the more extended parts, yield readily to massage treatment. A case of pericementitis or pulpitis may be aborted by a viorous rubbing of the gums. Instruct the patient to rub without ceasing, with finger and thumb, the lingual and labial or buccal surfaces of the gum at the aching point until the pain subsides. By this manipulation the distended capillaries are relieved of the determination of blood, the nerve tension is relaxed, and a normal circulation is established. The same applies to anemia, recession, (in recession the gum should be rubbed toward the cervico-coronal line always,) hypertrophy, hyperemia and all such conditions as arise from an insufficient or overabundent supply of blood to the gingivæ. In such subacute cases this treatment should be followed regularly, and for a period according to the tendency of the disease to assume the chronic form. This forcing out of the stagnant venous blood, and the flowing in of the arterial, is a pumping process which promotes the pulse and carries the full effects of the heart impulse into the affected parts.

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*Read before the Tuscarawas Valley Dental Society, Jan., 1894.

To remove a plaster impression from the tray quickly without marring the tray or breaking the impression, proceed as follows: Directly after removing the impression from the mouth, trim away all surplus plaster which will bind the impression to the tray, place a Bunsen burner upon the center of a folded towel, and over the flame of the burner move the impression, cup down, until it pops loose. This result is effected by the generation of steam between the tray and the impression, and is accomplished in less than a minute's time. The impression falls off unbroken upon the folds of the towel.

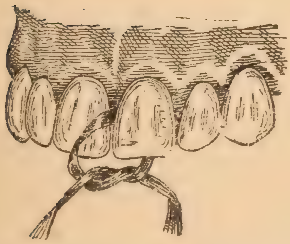
A very convenient foil carrier is made thus: take a large sewing needle, and with a corundum wheel, grind at the head until the eye is reached; thus a fork will be formed out of the eye. Draw the temper and curve the forked end somewhat; with riveting hammer flatten the point. Fill a cone-socket handle with pulverized shellac; heat the socket and insert the point of the mutilated needle; center carefully; with a pencil of the shellac substance add a little more to make the joint perfect, and the instrument is ready to catch gold.

Polishing Rubber Plates.—Perhaps the greatest difficulty experienced in constructing an artificial denture with plain teeth is the polishing of the pink or granular rubber rim, the festoons of which are hard to follow with the wheels and cones ordinarily used for the surface. This may be accomplished easily by the use of soft rubber tubes one and a half inches long, cut from the tubing used on the Bunsen burner. Run the tube on the cone of the lathe one and a quarter inches, leaving the outer end project a quarter. This projecting end serves as a cup, which, with moistened pumice, will reach and nicely polish the curves and depressions between and around the necks of the teeth. The entire outer surface of the cylinder is useful in polishing the rest of the rim surface, and the acute depressions in the lingual surface of the plate.

A very serviceable addition to right angle points of the engine is a number of small screw-pointed mandrels mounted with the smaller wheels and cones. In grinding to fit bands these mounts will enable the operator to turn many an angle with ease that otherwise would be an affliction to the patient and himself.

In filling carious teeth the purpose should be; first, to restore the diseased structure to the normal condition; second, to provide an artificial cicatrix. After the removal of the effete carious material, the adjacent territory beyond the line of disintegration contains the elements of decay, the proliferating micro-organisms. In this affected zone the vitality is impaired, and an agent is required which will render inert the degenerative principle, and by suspending the carious process allow recuperation and repair to take place. I believe that the oxychloride and oxyphosphate of zinc, as an initial stopping, will subserve the result indicated, and should be used in every cavity in which the insertion of a metallic filling is contemplated.

USEFUL HINTS.



Effective Wedging.—To wedge teeth, preparatory to filling, Dr. Sillito, Xenia, Ohio, uses a narrow strip of tape, such as is used in trimming childrens clothes, about one-sixteenth of an inch in width; passing one thickness between the teeth and tying a knot, as shown in the illustration, and drawing it tight. Try it.

To Finish Plates.—Dr. M. D. Bush, Canton, uses a tuft of cotton twisted onto a screw mandrel. It makes an effective finisher, carries the powder well and adapts itself to the surface of the plate. It is particularly useful in cases of high, and very narrow arches.

A Good Anodyne.—Dr. J. W. Jungmann, Cleveland, recommends, the following as an excellent obtunder for odontalgia, caused from pulp exposure, after extraction pain, etc.

℞	Menthol Crys. - - - -	gr. v.
	Tinct. Aconite, - - - -	gtt. xx.
	Chloroform, q.s. - - - -	ʒij

M. Sig.—Apply on gum over the seat of trouble with a pad of bibulous paper.

RETROSPECTION.

BY J. S. CASSIDY, M.D., D.D.S., COVINGTON, KY.

To deal in reminiscence has been from time immemorial an accepted indication that verdancy of callow youth, has given place, to at least, the period of life's prolonging, typified by autumn leaves; and however much we may deplore the over sensitive idiosyncrasy of our nature, when confronted by what should be a not unwelcome consciousness of the approximate number of the years that are gone, the fact remains; which to candidly acknowledge, tests more than less, the moral bravery of all. And thus the subject of this paper comes to me, in fulfillment of a promise, made before these somber thoughts had recieved initial development in that semi viscid fluid, otherwise the protoplasm, that surrounds the nuclei of the cells of the grey matter of my poor brain.

The unconstitutional statement made recently, by one of our ever youthful ex-presidents, that this society was rather more a social club, than a scientific body, relieves the writer of any imputation of irrelevancy, or of being a mere gossip monger on this occasion.

Twenty-six years ago, just passed, on a dreary drizzly morning in October, a fresh young fellow from the north-east corner of the Blue Grass region, made his debut as a student of the Ohio Dental College. The dental faculty at that time was composed of Drs. Watt, Taft, H. R. Smith, Cutler of Mississippi and W. T. Arrington of Tennessee, all gentlemen of ability and reliable authorities in their respective lines; but the clinics in those days, compared with the present, were sadly deficient, owing largely to the times, and the absence of our clinical professor, during most of the session. Impressions of the mouth for casts, were taken exclusively in beeswax, and these impressions like "footprints on the sands of time" were usually of uncertain outline, for our patients were mostly our janitor, a young white man, possessed with a high arched inferior surface of upper jaw, and unpossessed of the right superior central and lateral. His exceeding patience with us, would put to blush the fabled smiling statue on a monument, and could be explained only by a later discovery, that his position of janitor, enabled him to furnish a convenient trysting place, in the college building, to a number of outside conspirators against U. S. of whom he was probably the chief.

The monotony of our early remarkable clinics, was broken by a two week's visit of Dr. Corydon Palmer, who taught us pretty much, the fascinating art of tempering and fashioning excavators and pluggers, and most thoroughly, a never failing recipe, peculiarly his own, to prevent vulcanizers from exploding, which was to carry the pesky thing to the creek, and throw it in *a la* McGinty. Dr. Atkinson also paid us a brief visit, and introduced us to his mallet, then in its infancy. The apparent ease with which he obtained, *and retained complete dryness* of the part, in comparison with the efforts we had the pleasure of witnessing, of some of the members of the senior class, under like conditions, was indeed delightful, and perhaps encouraging.

At the next session, our clinics were much improved. Dr. Watling, from a queer named town in Michigan, was our professor; he stayed with us, even to the extent of renting a room, at 195 W. 4th street, where quite a number of the class paid a rather high figure, for us, for board and lodging; but as one of our boys, from Mississippi, declared with true southern chivalry, it was worth the difference, to be privileged to talk at least once a week, with our stately landlady.

One evening, we students were thrown into a state of pleasurable excitement, by learning that a young dentist named C. M. Wright, who was at that time teaching some of the other dentists of the city the mysteries of "Rose Pearl," and who took his evening repast at our hostelry, had lost his $75.00 overcoat, stolen of course from hat rack in front hall. The gratification of knowing that one so young, a member of the same profession that *we* were soon to enter, could evidently afford such an expensive habiliment, more than compensated for our sympathy; and for the time at least, real rosy aqueous vapors dotted the beautiful horizon of our financial hopes.

Rose Pearl plates, for artificial teeth, colored camphorated gun-cotton, in coarse powder, with concomitant sundry pounds of putty, to use in regulating the pouring of sections of metallic dies, and counter dies, subjected to heat and pressure, for 24 (or was it 48?) hours, in order to avoid the payment of less than $100 a week for the right to vulcanize as much caoutchouc as you pleased, was an object lesson in itself, to prove that deep down amid the tissues of the brain of mankind, there is an instinctive energy opposed to all monopolies.

During the latter portion of the session, in February, 1869, rubber dam was introduced, but was not at first kindly received. Men of matured minds in those days, as now, were creatures of habit, and as an instance, we may allude to the fact, that within that immediate period, Dr. J. Taft, put in an heroic contour gold filling, in cavity of posterior proximal surface of right inferior second bicuspid, with napkins as the only restraining influence against the inflow of saliva. The patient was Dr. Watling.

The work became submerged when about two-thirds near completion, but a fresh napkin supplied, dryness was again obtained, new retaining pits in the mass of gold *in situ*, and the operation was completed with perfect satisfaction to all concerned.

The partial rejection of rubber dam at the beginning of its use, was due, I remember being told, to its tendency to slip from place, for ligatures had not appeared. Indeed I am pretty sure it was a year or more later than the beginning of '69 that Dr. Corydon Palmer, thought it worth while to publicly exhibit before the American Dental Association, his method of ligating the dam in place.

The mallet also received some pretty hard blows at that time. My first pleasure in witnessing the deliberations of the Mississippi Valley Association of Dental Surgeons was in March, 1868, in this city. One of the eminent members objected to using the mallet in filling the lower permanent molars of young people, where the extremities of roots were not fully developed, claiming that the too sudden overcoming of inertia by the blow, would tend to drive the tooth too far into its bony socket. He forgot that the force applied affected the spongy mass of gold only, inasmuch as after the gold is condensed, the blows cease. Others derided the mallet as sure to split the tooth "wide open," so to speak.

Dr. McKellops, who was there in all his glory of perennial youth and personal adornment, hurled his pyrotechnics at the opposition, and, among other things, asserted that by the aid of the mallet he could fill an egg-shell with gold, and condense the metal perfectly, without fracturing the shell. His sentiments were in general endorsed by such members as Drs. H. A. Smith, J. Taft, and Watt, and mildly by Drs. Keeley and Jas. Taylor. Among the other members present, whom I now recall, were Drs. Berry, Cutler, McCullum, Morgan, Arrington, and H. R. Smith. The latter gentleman, after listening for some time, to the details of uniform success in the performance of certain difficult operations, somewhat excitedly announced to the president, his wish to resign his membership, for the reason that very often indeed, he met with failures, and if the other gentlemen had been telling the plain undecorated truth, *he* was plainly unworthy of further fellowship with them. This sally produced a good deal of crawfishing, which later experience and observation have convinced me is the debt, alas! we too often have to pay for the possession of a too sanguine temperament.

Is it because, so often the wish is father to the thought, that we are unwittingly impressed with the apparent existence of an actuality, when 'tis only the shadow, rendered tangible to our senses by our disposition to observe some things by refracted light, rather than by the incident ray?

Pomposity and humility, and all the intermediate characteristics pertaining to *homo sum*, are probably due to a relative difference in the arrangement, temporary or permanent, of the ultimate molecules of which the brain and its appendages, also the liver and perhaps the spleen, are formed: similarly to that which produces the difference in color, hardness, and specific gravity in the allotropic modifications of carbon, and so we involuntarily forgive the stronger and sympathize with the weaker elements of our nature.

'Tis said that the statue of Memnon gave forth its melody only by the influence of the sunbeams of early morning, wherefore we again substitute the recollections of youth, for present philosophy, and recall the early spring of 1871. 'Twas then our pleasure to observe for the first time the executive ability of the dental engine. The machine was a crude affair—pneumatic power by means of a pedal bellows, flexibility nearly absent, external cog-wheels of brass at the back end of the embryo handpiece, with ill-fitting burs and drills, large enough to make effective work on caries of the tibia; and yet, with all its coarseness, it was received as an instrument of inestimable value, the principle of which, when somewhat improved, would be an important time saving appliance, a conservator of energy, and a blessing by reducing the pain of excavating; and these predictions have in a measure been fulfilled.

If one were devoid of conscience he might write on in this tiresome way *ad infinitum*, and describe the kaleidoscopic visions as presented by persons and things. Of a message, worded strictly according to the code, which I timidly carried from a southern Hotspur, to a tantalizing northerner, because of the latter's smiling, daily greeting: "Oh, you Ku-Kluxes!" The proper apology was duly made, however, and yours truly, as well as all involved in the unpleasantness, save one, still survive; of the *dramatis personæ* in the membership, at the annual recurring meetings of the Mississippi Valley Dental Association; of the many young men and men of middle age, who under my own observation have gone proudly forth with their diplomas from the Ohio valley center of dental education, nearly all of them to make their mark, both wide and deep, in the prolific field of dental practice.

Ah, me! what memories, pathetic and humorous, crowd upon each other: so fast they follow, like the waves on old ocean's beach, or the multiplying furrows in the plowman's fallow soil, truly the physical types of human life.

Pity it is that flowers were not given to the living as generously as our wishes are, for peace to those we knew, who have gone to the everlasting, where they no longer see as through a glass darkly, but know, even as they are known.

We might write a chapter on the introduction of the "germ theory of disease," and prove by it the chemical genesis of dental caries, together with the necessity of H_2O_2, etc., etc. We might promote discussion by alluding to the blessings, or the curses, according to the bias of our minds, that have accompanied the use or abuse of cocain; we might extol the virtues of many members of the benzine ring, otherwise known as the coal-tar products; or we might analyze the fruit of knowledge plucked from the tree of good and evil, and divide the true from the false, in those dental matters that culminated in the World's Dental Congress at Chicago. But instead of imposing further on your valuable fraction of an hour, permit me to ask you to look around you from the relatively high pedestal on which you stand as members of one of the best, most enlightened societies of the world, and decide, each for himself, whether dentists, as such, have advanced beyond the general procession which has marked the lines of progress during this last quarter of the 19th century? Shall we give to the genius of mechanics, and especially to the dental engine and its appliances, more than their meed of praise, for having rendered possible—sometimes—the immediate filling of roots of bicuspids and molars, crown and bridge work, *ad nauseum cum sale?* And while giving to Cæsar thus the honor due, let us not forget the fact that methods the opposite of boring and scraping are being appealed to, in order to supplant as far as possible, the barbarous nature of our work.

The uses of $AgNO_3$ to arrest decay; of trichloracetic acid to overcome the tribulations caused by calculi and pyorrhœa; of Na_2O_2 and sodio-potassium, as disinfectants for root canals, and of 50% H_2SO_4 to assist in opening up these same caves of perdition, wherein lie buried more of the spirits of dentists than, let us hope, shall ever be imprisoned in the shades of hades, are undoubtedly in such direction. Neither should we forget the efforts that have been and are still being made, to furnish us with the ideal filling; and it will come, in its own good time and in its own good way, perhaps by electrolytic deposition in the prepared cavity.

COMPILATIONS.

A NEW AND SIMPLE METHOD OF CONSTRUCTING A SPECIAL SEAMLESS CROWN.

DR. W. H. DORRANCE, ANN ARBOR, MICH.

This method is applicable in all cases where it is desired to fit a molar or bicuspid perfectly for the support of a piece of so-called bridge-work.

If the occlusion of the opposing teeth will not permit the requisite thickness of gold to intervene, grind the tooth to be covered (or its occluding fellow, or both, if best).

Take an impression in plaster and fill it in such a manner that it may extend some length in the direction of the root. With a sharp point scratch lightly into the tooth following the gum line—this is to aid, if needed, in the future trimming of the crown. Trim away the model in the direction of the root of the tooth to a somewhat cylindrical form but in section having the shape of the tooth at the neck. Wrap this cylinder about—carrying the wrapping up as high on to the grinding surface of the tooth as is easily convenient—with tin rolled to the thickness of gold to be used, say No. 28, Brown & Sharp's gauge, taking care to make a smooth butt joint, and to carefully burnish the tin to the surface of the model by wrapping with fine wire or thread about the end opposite the crown. Press the still uncovered portion of the crown of the model into moldine (clay mixed with glycerine) and cast a button of fusible alloy into the impression thus formed. Oil this button and strike it into lead, and with these dies lightly swage from a disk of the same tin a cap which, when trimmed and fastened to the model with a very little wax completes the covering of the model.

Take an impression of this tin-covered model, either by dipping in plaster to the line of the neck of the tooth, or should the bulge of the crown prevent dipping, an impression must be taken in halves, which when filled will give a model of the tooth which is larger than the natural tooth by the thickness of the gold crown yet to be made, but similar in every other respect.

Trim this model as the first, and when nearly or quite dry, dip to the neck line in melted fusible alloy, withdrawing the model just as the alloy sets.

A cheap and fair alloy for this purpose is made of tin eight parts, lead one part and bismuth one part, all by weight, melted together in the order named, and when well mixed, poured in buttons on a cold slab. This alloy melts at about 360° F., and is strong and hard, but does not cast quite sharply. A better alloy consists of lead, five parts, tin, three parts, and bismuth, two parts. This melts at about 212° F., and casts sharply. A convenient way of using it for the present purpose is to cast in common brass ferrules, using one $\frac{5}{8}$ in. in diameter for bicuspids, and one $\frac{3}{4}$ in. in diameter for molars. Place a suitable ferrule on a smooth, cold surface, like a flatiron, a large hammer, an anvil, or a piece of steel plate, melt the alloy and pour into the ferrule, and at once dip the model as deep as the neck of the tooth only, withdrawing the model carefully just as the alloy begins to set. After dipping and removing the model, and the mold is cooled, it should be trimmed with a sharp knife about the border to remove the slight undercut, and oiled. It is then ready to receive the little cup of gold formed by the Morrison outfit out of 22k. gold. The cup should be of such size as to slip into the mold, though it may sometimes require flatting a little on two or more sides with a light hammer, after which it must be about two-thirds filled with oiled shot of the size called "dust," and driven to shape in the molds with the punch that last drove the cup through the die plate. The now fully formed crown may be worked out of the mold, or if it sticks too much by reason of its shape, it may be carefully melted out, and when trimmed this crown will be found to exactly fit the natural crown for which it was formed.

A mold constructed of the above alloy by either dipping a natural tooth (the surface of which has been slightly oiled), or a model of a natural tooth, will be found to be much more satisfactory for forming a seamless crown than the plate which is a part of the Morrison outfit, and will stand well for forming several crowns. When worn out or dull, the molds may be remelted and redipped indefinitely, care being taken to avoid overheating.

With a variety of extracted teeth, typical molar and bicuspids, whether sound or made so in shape at least, by filling with cement, or with models of snch teeth as we desire to reproduce in shape in a seamless crown, a mold can be made and a crown formed in five minutes, and the maker is not limited to a few shapes.—*Uni. Mich. Dental Journal.*

ALL SORTS.

Late Eruption of Teeth.—We recently published the details of a case recorded by Dr. Weil, in which a canine tooth was not erupted until after the sixtieth year. We hear that another remarkable instance of late eruption has been noticed in the case of a patient under the care of Mr. H. Beadnell Gill. A lady, eighty-three years of age was wearing an upper and lower denture. The latter required altering in consequence of the eruption of the two lower wisdom teeth. This did not complete the tale of the patient's woe, for the upper case has now become uncomfortable in consequence of a supernumerary tooth appearing in the place originally occupied by the left upper central. It is a peg-shaped tooth about the size of half a bicuspid, and the bone around is very dense.—*Brit. Jour.*

Phosphate of Soda in Nervous Affections.—Crocq reports his results in the use of subcutaneous injections of phosphate of soda (2 grams to 100 grams of laurel water). Three cubic centimeters of this solution are to be injected subcutaneously in the arm or leg, with strict antiseptic precautions. At first the injections are to be given every day, and afterwards on alternate days.

No reaction follows these injections, only a slight burning sensation at point of puncture, lasting only a few seconds.

The author states that the drug used in this manner is a powerful nerve tonic, which will generally effect a cure in cases of functional disorders of the nerve centers, but can only exert a palliative influence in organic lesions.

Several cases of locomotor ataxy are reported to have been greatly benefitted by the use of this drug.—*Gazette Med. deLiege.*

McCandless (A. W.) on Correct Position of Crowns.—Too little attention is generally paid to the correct relation the crown made for the abutment should sustain to the natural tooth adjoining. By cutting down the abutment sufficiently to obtain an accurately fitted band, a wide space between the teeth is gained, and by properly contouring the gold crown it may be made to knuckle nicely against the adjoining tooth at the occluding surface, thus leaving a self-cleansing space at the neck, which is always found in that location between natural and well formed teeth. By requiring the gold to knuckle against the adjoining tooth, the wearer is not annoyed by food wedging in between the crown and tooth. The occluding surface of the gold crown, of course, should be a *fac simile* of the natural tooth which it substitutes, and should be attached to the band or ferrule in such a position as to allow perfect occlusion with the opposing teeth.—*Extract Review.*

Examining Boards.—Dr. Peirce says: My views are that competent examining boards should thoroughly be prepared to examine and say whether the applicant is qualified to practice dentistry. If we have these, they are for the purpose of judging of the qualification of applicants. They have no right, in my estimation, appointed as they are by the legislature, to ask the applicant whether he has a diploma, or where he got his education. All they want to do is to ascertain if the applicant is qualified to practice dentistry, and it is not their business to know where that qualification was obtained, as long as he possesses it. The law has no right to ask where the information was gained. It is simply whether the information is possessed by the individual, and I would have our board so educated, and so thoroughly appreciate their position that they should hold that ground and not accept a diploma or anything but a thorough qualification, for when we have that the public is protected. —*Extract Items.*

Beeswax a Perfect Root Filling Material.—It can be easily and rapidly introduced; flows freely to extremity of canal when heat is applied. No virtue in cotton or silk, simply aids in forcing and packing canals. Experience will demonstrate features of merit of all—wax, cotton and silk.

In the use of wax you will have to use drawn temper canal broaches or pluggers heated to flow the wax, first small size, then larger; as the canal increases in size toward pulp chamber, place at the bottom of chamber after canals are filled, a piece of rolled lead, size to suit, then fill cavity and finish to completion.

All that can be accomplished by filling canals is the preclusion of moisture and gases, and for this purpose wax excels any other material now in use; fire alone can destroy it; it is non-irritating and non-conducting in property, causes no discomfort, and can be manipulated quickly. If forced through point of root no injury will arise.—*Extract Southern.*

Amyl Nitrite and Cocain.—Amyl nitrite and cocain are mutual antidotes. Dr. F. Schilling records a case of accidental poisoning by the nitrite of amyl where an injection of cocain soon caused the disagreeable symptoms to disappear. A lady had received it for spastic hemicrania. She carelessly spilled about forty drops on the front of her dress. When he saw her she was excited, restless, complained of terrific headache, vertigo, palpitation of the heart, decreased vision, everything appearing yellow; she was conscious, staggered in her gait, her face was very red, the carotids pulsated violently, pulse 80, of moderate tension and volume, and reacted well. He immediately injected one gramme (fifteen drops) of a 5 per cent. solution into the region of the neck. In a few minutes the worst symptoms had vanished. The headache, vertigo, etc., disappeared, her color was normal. The vaso-constrictor influence of the cocain antagonized the vaso-dilator action of the amyl nitrite. Every one knows that amyl nitrite is an antidote to cocain and no one would think of giving an injection of this local anesthetic without this antidote handy.—*Extract LeSemaine Medicale.*

Cleft Palates and Lime Salts.—There has long been a mistaken idea among dentists, that teeth that are deficient in lime salts may be hardened and their texture improved by a diet that is rich in calcic matter. That pregnant women who subsist upon fine flour and the like, are depriving their infants of that which is necessary to produce good teeth, and that they should take phosphate of lime to furnish tooth pabulum for the needs of their own system, and that of the fœtus which they carry.

Modern science has shown this to be an error. It is useless to give any form of lime salts *for trophic purposes*, because under no circumstances can they be assimilated. They may be useful as medicines, but never as foods, because the animal economy *cannot organize the inorganic* If lime salts are needed, they must be derived from organic sources, and must be elaborated with the system. If phosphate or carbonate of lime be given, it must pass out of the body precisely as it entered it, and be eliminated. When these elements are needed the body will get them from the food, which must be organic, and then they can be built into the system.—*Extract Ed. Practitioner.*

Peirce (C. N.) on the Etiology of Pyorrhea Alveolaris.—In a paper read before the New York Odontological Society, Dr. Peirce presents some new thoughts regarding the subject of alveolar pyorrhea.

He suggests the use of two new terms, namely, ptyalo-genic calcic pericementitis, and hæmato-genic calcic pericementitis, the former term to be applied to those cases where the origin of the deposit is the saliva, and the latter for those where it is probably derived from the blood. The hœmatic-genic calcic pericementitis he considers the real condition in true pyorrhea, and suggesting that the exciting cause might possibly be some chemical agent derived from the blood, the product of a morbid constitutional condition. This view he supports by the results obtained from chemical analysis of the deposit found upon the apices of teeth lost in pyorrhea. According to the author, in every instance the deposit was a combination of calcic urate, sodic urate, with calcic phosphate and carbonate. The existence of urates, in which the uric acid is the predominating element, shows that this deposit is a precipitate from the blood exudation, and the result of an irritation of constitutional origin, the disease being but another phase of the gouty diathesis.

Harlan (A. W.) on Disinfecting Instruments.—It does not matter if you do boil instruments, if you wipe them off with an unsterilized towel or napkin, they are in the same condition they were before they were boiled. So the thing to do, when you disinfect a pair of forceps, or a pair of pliers, or a smooth broach, an excavator or scaler, is to have the instruments dried in such a way as will prevent their being infected before you use them, and you can dry them with heated air, or you can disinfect them and place them in a solution and put them in some kind of a receptacle from which the air is excluded and let them dry with the disinfectant on the surface, and if the disinfectant does not smell, so much the better. If it does not spoil the instrument, it is still better.

I have used lysol, and used it in the following manner. I have a sixteen ounce beaker, into which I place four ounces of lysol, and fill it with water, and from that sixteen ounce beaker I pour an ounce of the solution that is made into an eight ounce beaker, and that is about eight inches high ; so I fill that with more water, and after the instruments are cleaned in boiling water, then they are stood in the eight ounce beaker, and they are removed from that into an aseptic pan and allowed to dry. Then I have got sterilized instruments.—*Extract Review.*

An Interesting Case.—Have just removed from the mouth of Miss B. M.—, who is eleven years of age, the first superior temporary cuspid on the left side. The incisors, bicuspids, and first and second molars, all of the permanent set erupted—this is the only temporary remaining. The permanent cuspid was erupted about one-half of the crown through the gum, about one-fourth of an inch posterior to the lateral incisor of that side, somewhat turned on its axis, it had grown and erupted in such a way as not to come in or near the root of the temporary cuspid, as a result of which the root is intact, not a particle of absorption or wasting of the root having been made ; showing very clearly that the coming of the permanent tooth exercises an influence in the removal of the roots of the temporary. There was no disease of the gums near about this tooth nor any of the teeth in the mouth, everything seemed to be in a state of perfect health so far as the gums and the sockets of the teeth were concerned. I have seen many such cases, but have never yet seen an instance in which the roots of the temporary teeth were absorbed when the corresponding permanent tooth was so far out of place as to have no influence upon the temporary. If in any case the roots of the temporary teeth have been found absorbed under similar conditions, or in the absence of the permanent teeth, we would be thankful to be advised of the fact.—*Editorial Register.*

Hulke (J. W.) Uncommon Case of Salivary Calculus.—On November 3rd, I saw a gentleman aged fifty-seven years who was in some anxiety of mind about a swelling in his mouth. In the floor of the mouth, apparently involving the left side of the root of the tongue and passing backwards below the lower end of the anterior faucial pillar, between the tongue and the mandible, there was a considerable swelling, which was also conspicuous externally behind and below the mandibular angle. The mobility of the tongue was slightly hampered, and swallowing was difficult and painful. In the buccal mucosa overlying the swelling there was a apparent opposite the wisdom tooth a small orifice from which a little bead of pus was seen exuding. A probe passed through the opening entered a sinus and struck an object so hard that no doubt of its being a salivary calculus was possible. The opening having been enlarged, an oval calculus measuring 3.5 centimetres in its length and 1.8 centimetres in its short axis was extracted. Its surface was tuberculated and indented with a series of sinuous furrows. The patient mentioned that during several years he had noticed a lump in the left side of the neck. Its size had greatly varied, and recently it had become much larger and had been painful, making swallowing rather difficult. After removal of the calculus the surrounding swelling soon subsided, and as yet he has continued to be free from further trouble.—*Extract Lancet.*

Dental Caries, Necrosis and Subsequent Excision of Jaw.—This case serves to illustrate the most severe complications of neglected dental caries. The amount of the necrosis was unusually extensive and involved the removal of a considerable sequestrum. In fact, whatever the cause of the suppuration, the condition is one which calls for most active surgical treatment.

A woman aged fifty-two was admitted into the hospital on Nov. 8th complaining of fixity of the jaw and swelling of the left side of the face. The patient stated that twelve months before admission "lumps" appeared at the angle of the jaw and left side of the face, and at the same time she began to experience difficulty in opening her mouth; this had been gradually getting worse. The swelling of the face had been opened in three places, and a considerable quantity of matter had been let out. The patient was unable to open her mouth for more than a quarter of an inch, and she only did this with difficulty. The second and third left lower molars were found to be carious. There were several sinuses round the angle of the jaw. On Nov. 13th the patient was anæsthetized and the jaw was wedged open; at the same time the last two lower molars were extracted. As the patient was still unable to open her mouth to any extent, she was again anæsthetized on the 30th. A vertical incision was made from just below the zygoma over the ramus nearly as far as the angle, and from the upper end of this incision another passed horizontally forwards just below and parallel with the zygoma. The tempero-maxillary joint was found to be suppurating, and the inferior maxillary bone as far forwards as the inferior dental canal to be necrosed. The bone was disarticulated, the necrosed bone was removed in three pieces, and the glenoid cavity was scraped. The wound at first suppurated freely, but the patient was discharged on Jan. 13th.—*Extract Lancet.*

Regarding Dental Societies.—* * * The most convincing example of herculean effort without a corresponding equivalent in results has recently been given the world in the Columbian Dental Congress. It demonstrated, as never before, that it is impossible to bring masses of professional men together and in this way advance the standard of scientific knowledge. If dentistry is to develop beyond its present status, other means must be adopted, and we think the time is propitious for at least a discussion and comparison of views as to the best means to accomplish more with less use of dead material.

We think it must be conceded that the local societies, as now constituted are, probably, the best form of organization, as they come closest to the individual. The State associations should be relegated to oblivion, as they can give no reasonable excuse for existence. The national organizations should be remodeled on strict scientific lines or be dropped altogether as having outlived their usefulness.

While the writer of this does not feel it his duty, even if he be competent, to suggest plans for reorganization, it may not be construed as out of place to offer a personal opinion.

If the individual is to be the unit in scientific investigation, the local society should be the basis of his support. There should be the feeders to a national organization, and there should be nothing between these two bodies.

Representation from the local to the national should be based solely on original work. Mere membership should have no weight in the selection. The national body would then be composed of a limited number, but all would be original thinkers. In this body a similar rule should be enforced compelling a member, during a continuance as a delegate, to present one or more truly original papers upon subjects worked up in the laboratory and not in the brain of the writer. The influence of such an organization cannot be computed. It would in a very brief period change the whole current of thought and challenge the respect of the world.

We do not propose to work out the details of such an organization. To many, doubtless, it will seem utopian, but in the view of the writer of this it must be the organization of the future, and it seems to him that it is the duty of all interested in the scientific well-being of our profession to work up towards it, and, in any event, leave time-worn roads for a more direct avenue to the Temple of Knowledge.—*Extract Editorial International.*

Royce (E. A.) on the Spreading Properties of Gold. An Ideal Shaped Plugger.—Let us consider first the force of the plugger. It is a law in mechanics that a force is delivered to an object at right angles to the surface delivering that force. With a flat-faced plugger it is not possible to obtain any lateral force unless the point is directed toward the sides, in case that is done dents are made in the gold by the corner of the plugger which it is a practical impossibility to fill. If any spreading occurs under a force from this point, it must be deep in the filling, just where it may do damage by causing the enamel to check.

Under points of this kind gold cannot be coaxed, but is the most obstinate and unruly material that you can think of. Force exerted in the center of the filling or anywhere but right at the edge, has a tendency to pull the edges of the filling away from the walls of the cavity, for the force is not distributed or diverted in the least, but is always directly ahead of the point, consequently the gold does not spread on the surface under a flat-faced plugger.

The first decision that I came to was that the working face of the plugger must be a segment of a circle, and the radius must not be too short.

Next there must be a working side which should be ovaled and the bulge as near the end as possible, and there must be no angles to come in contact with the gold.

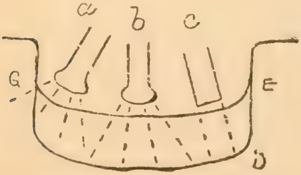
I also found in coaxing the gold up to the side of the cavity it was well to have the working end of the plugger slightly larger than the shank, so I adopted the bell shape, the large end to be the working end.

Now, however obtuse an angle may be, if the direction of the gold and the resistance are not in a continuous line the force will be diverted, making lateral force of it and causing the gold to spread at every blow of the mallet. The spreading under force of this kind is not a spreading deep in the filling, but at the surface upon which the force is delivered. With this force the gold can be literally coaxed out of ridges and bunches, and can be moulded in a manner that is a surprise to any one at its first demonstration.

As the plugger is worked from the center of the filling toward the sides, one can see the gold go with it, so the gold is naturally made higher at the walls than in the center.

The next study of force is how the rounded corners condense the gold near the walls.

Drawing lines at right angles to the surface will give the direction of the force, and I think the question is so plainly answered that I need but show the illustration.



The figure will show you why the force delivered by a flat-faced plugger has a tendency to draw the gold away from the walls of the cavity. Also how force delivered by a bell-shaped plugger forces the gold to the wall.

A blow delivered to “A” will force the gold closer to the wall at point “G,” and the blow upon “C” will force the gold toward "D," while the gold at "E" is not pushed to the wall but is drawn away from it.

The lines drawn from the face of "B" show the direction of the force delivered by it, demonstrating clearly why the tendency is at all times to drive the gold to the walls. This explains the spreading of gold which I have shown you. This is the reason that in using the plastics they seem to creep out from under the oval-shaped plugger toward the wall of the cavity, and adapt themselves so nicely to any inaccuracies in those walls.

For a number of years this bell-shaped plugger has been thoroughly tested, not only in my own hands but in the hands of some of the best operators in the west, and the results have led me to believe that spreading holds as important a place in the adaptation of cohesive gold as of any filling material we use.—*Extract Review.*

Rhein (M. L.) on Ideal Bridge-Work.—The bridge itself can be constructed of gold, gold and platinum, all porcelain, rubber, platinum, aluminum,—in fact, in any manner that the operator desires,—and at the same time the restoration of the contour of the lost parts can be supplied up to any desired point.

Having attempted to explain to you the appearance and method of application of this form of bridge-work, we claim that it meets all five points which we especially desired to attain, and in which every other form of work is more or less defective.

First. The dentist having an absolute choice of any material of which he desires to construct his bridge, the question of contour and restoration of lost parts becomes merely a matter of judgment.

Second. The spring on the slot of the bridge, while it holds the fixture absolutely firm and secure, preventing any possible lateral movement of the teeth used for abutments, yet allows a delicate elastic motion of the bridge which not only closely imitates the movement of the natural teeth, but lessens that intense rigidity which is too much of a strain for the abutments.

Third. The easy removal and replacement of the fixture speaks for itself.

Fourth. All crowns that cover the teeth used for abutments are made to fit the parts under the gum as accurately as possible, and immediately after the cementing of the crown are burnished to a knife-blade edge. Where a root is used as an abutment, and a porcelain face attached to it, the pin runs through a cap which perfectly fits the end of the root and protects it from caries.

Fifth. The mutilation of teeth with living pulps is avoided by the use of crowns with one side split.

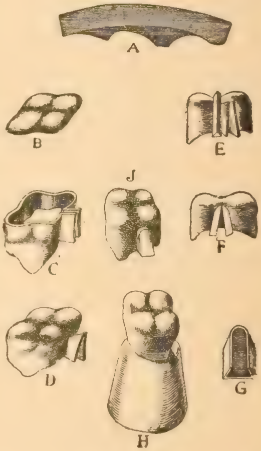
All the credit for the ingenuity displayed in mastering the mechanical technique necessary to accomplish the result portrayed, is due to Dr. C. L. Andrews.

I shall endeavor, as briefly as possible, to describe and illustrate in detail the manner of carrying the work to a conclusion.

The adjacent teeth should be freed from any vestiges of calcareous deposit, and thoroughly polished. If the tops of any of the teeth used as abutments need to be shortened to allow for proper occlusion, this should now be done, and if there is not sufficient room for gold, gauge 30, to pass between the teeth, this should be obtained by wedging, not by mutilation of the enamel. The teeth in position having been carefully wiped with olive oil, a plaster-of-Paris impression of the parts is taken. A cast having been made, the teeth that are to serve as abutments are trimmed on the model to the distance of one-thirty-second of an inch under the gum. The model is then stearinized, and in careful hands the entire fixture can frequently be made on the original cast. Where there is danger of marring the plaster, zinc dies of the teeth on which crowns are to be placed should be made.

To illustrate the detail of construction, turn to Fig. 4, H, representing a tooth over which a crown is to be made. It is an upper molar, free from decay, with a healthy pulp, but with the roots slightly exposed, as is so often found in these cases, whether from the ravages of pyorrhea alveolaris, or a tilting forward of the tooth, due to the loss of adjoining teeth and a faulty occlusion.

Fig. 4.



Having selected a piece of gold (twenty carat and 29 gauge) it is struck up on the die to fit over the occluding surface of the tooth, and down the sides to a point where the swell of the tooth commences (Fig. 4, B). This distance varies, according to the size and shape of the tooth, from one-sixty-fourth to one-sixteenth of an inch.

The bridge, to be removable, can be no longer than the shortest distance between the two teeth that are to be used for abutments; consequently our next step is to determine the two points on top of the ridge between which there is the shortest distance. Having obtained this by means of compasses, it is marked on the edge of a piece of stiff cardboard, which is then squared so that both sides are parallel. The lower edge of the card is then cut to assume the exact profile of the top of the ridge at the point corresponding to the shortest distance between the teeth. Holding the cardboard as the bridge will move when completed, with a sharp-pointed pencil mark the ridge alongside the edge of the card and the point of contact with the grinding-surface of the tooth. This will indicate the exact position which the gib will assume on the crown and on the ridge.

To obtain the pattern for the remaining portion of the crown, take a piece of heavy tin foil, similar to that used for covering the top of a champagne-bottle. With this fit the sides of the tooth perfectly, as far as carved on the model, allowing the ends to extend about three-sixteenths of an inch on the ridge of the maxilla at the points marked (Fig. 4, C).

Having flattened out the pattern, cut by it a piece of gold (twenty-two or twenty carat, 30 gauge), but about one-thirty-second of an inch short of the free margin (Fig. 4, A). Along the edge of this sweat a piece of pure gold, and trim this to correspond to pattern. Now bend the piece of gold, and burnish it to fit the tooth the same as the pattern originally did (Fig. 4, C). Placing a thin strip of mica between the two projecting ends of the band, adjust to it the cap and solder them together (Fig. 4, D).

Having reached this stage in the construction of the crowns for both abutments, place them in proper position on the teeth on the model. For constructing the dovetailed gibs, we select a piece of *perfect* three-cornered wire, one-half the width of the intended gib. From this cut two pieces a little longer than the length of the crown, each piece becoming one-half of the desired gib when it is attached to the crown.

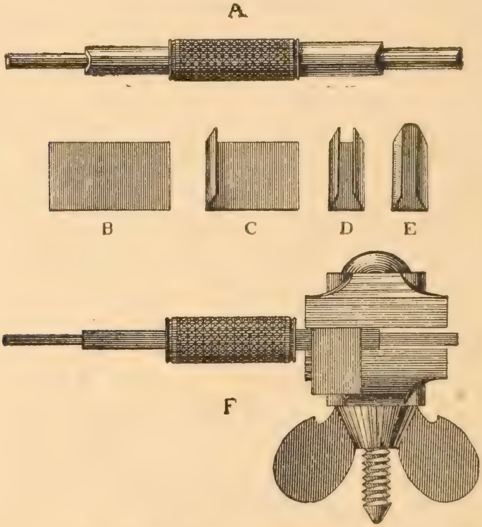
It is now necessary to determine the exact position in which each gib shall be attached to its respective crown, so that when it is placed in proper position it should be absolutely parallel with the gib on its companion abutment, in order that the bridge should meet with no difficulty in sliding.

To determine the accuracy, take a cardboard template and place it in position against the projecting ends of the band. With a thin-pointed knife-blade instrument draw a line along the edges of the template on the band of each crown. Having removed the crown from the model, close the projecting ends of the band tightly over a thin shaving of mica left between; then having placed a speck of flux wax just outside of the line marked on the projecting end of the band, with a pair of tweezers grasp from end to end one of the cut pieces of three-cornered wire, and having warmed it, tack it on to the projecting end of the band, true with the line marked out (Fig. 4, E); turn over the crown, and smearing another bit of flux in a corresponding place, attach the remaining piece of wire parallel to the one already in position. The crown is now invested so that the plaster and marble-dust imbeds and firmly holds the ends of the wire, leaving it, however, uncovered at its point of union with the band, to which it is now securely united by soldering. Remove the investment, and all the excess of metal; then with a file bevel the upper portion of the gib, leaving it somewhat cone-shaped, as seen in Fig. 4, F.

This shows the completed crown with the gib in position, so that it can be opened and closed, in which position it can be securely locked by means of the key (Fig. 4, G), which is made as follows:

For this purpose, an instrument devised by Dr. Andrews can be easily made by taking a piece of three-cornered Stubbs's steel and flattening the end of the triangle, which then makes the steel four-sided as shown in Fig. 6, A, in which illustration of this instrument there is shown the possibility of making four different sized keys, as the size of the gibs naturally varies with the dimensions of different-sized teeth. Still, having the smallest-sized instrument required, from this a larger-sized key can be made by the exercise of ingenuity. Quite recently Dr. Andrews has devised a pair of pliers to be used in place of this instrument.

Fig. 6.



Proceeding to make the key, select a piece of clasp metal, 29 gauge, a little wider than the length of the finished gib, and square the ends with the sides (Fig. 6, B.)

Having measured on this piece of metal, with a fine mark, the width of the side of the gib, secure the tool and the metal in a vise with the broad side of the tool on the metal alongside the line marked, as seen in

Fig. 6, F. Now by simply turning this edge of the metal to fit the side of the tool, there is made one side of the key (Fig. 6, C).

Drawing the metal tight against the tool, turn it on its side in the vise and form the other side to the tool, the same as before, and remove any excess. Both sides of the key are now completed (Fig. 6, D).

The key is then placed over the gib, and carefully fitted to the same by means of a file. The cone is formed either by sweating a piece of gold on top end filing to shape, or by splitting the sides of the key to a point equivalent to the base of the cone on the gib. Then bend inward the two loose ends to form the cone, and solder them together, cutting off the projecting ends (Fig. 6, E).

The key is now entirely finished, and when in position securely locks the crown to the abutment, and the entire crown, with key in position, has the appearance depicted in Fig. 4, J.

Where the shape of the tooth used as an abutment permits of the construction of a crown entirely closed, the dovetailed gib is simply soldered at the proper position on the side of the crown, and no key is required.

Both crowns being secured in proper position on the teeth, you are now ready for the construction of the bridge. It is unnecessary for us to detail any portion of this except the extreme ends, as the main portion of the bridge can be constructed to suit any individual fancy, or the exigency of any particular case.

A piece of clasp metal, gauge 29, is formed into a slot to fit the gib, if it is on a closed crown, or the key of the gib if the side of the crown is open. This slot is constructed in a manner similar to the fashioning of the key.

Whatever form of bridge is used, it is contoured so that it entirely covers the sides of the slot, except about one-sixteenth to one-eighth of an inch of the gingival end of the lingual or palatal side, which in a triangular shape is left exposed.

By bending this exposed triangular piece slightly inward, it forms a spring which should fit in a little bevel filed at the bottom of the gib. This effectually prevents the bridge from riding up and down in mastication, and is at the same time devoid of sufficient resistance to prevent the patient from removing the artificial substitutes or restoring them to place.

This method of bridging spaces where there is considerable overhang of the teeth, without mutilating them, has been in practice since 1892, and we can safely commend it to any one who is willing to do and capable of doing accurate work.—*Abstract Cosmos.*

CORRESPONDENCE.

CHICAGO LETTER.

The revival of the interest in the work of the different dental societies of this city, as noted in the last letter to the Ohio Journal, is still growing. The growth is slow, but seemingly sure, and the old standbys whose efforts always keep societies alive at critical periods are correspondingly happy. The revival was especially noticeable at the last meeting of the Chicago Dental Club, held at the Tremont House on the evening of Jan. 22nd. At a previous meeting disorganization of the Club had been seriously considered, but at this one the members became so aroused that their old system of management during the past year, through an Executive Board, with only two active officers, the Secretary and Treasurer, was abandoned, and Dr. W. H. Taggart and Dr. E. S. Talbot were elected to the newly created offices of President and Vice-President. This society has done some excellent work in the past. Quite a number of thoroughly scientific papers have emanated from it. There is no reason why it should not continue to be one of the most progressive bodies not only of the city but of the country, if only its members become imbued with the proper spirit, which is the spirit of work.

The semi-annual meeting and banquet of the Delta Sigma Delta was held at the Grand Pacific Hotel on the afternoon and evening of January 25th. It was a success in every respect. About seventy-five members were in attendance and a glorious good time was reported. At the business meeting the various interests of the society were discussed and plans were formulated for furthering them. This organization is becoming (if it is not already so) one of the most potential influences in the dental profession. Its membership, which originally consisted entirely of college students, has become so extensive that it embraces the leading dentists from the entire world. Such a body of men can not but be all-powerful in moulding the thought and sentiment of our rising profession. From a distance were present Drs. W. C. Barrett, of Buffalo, N. Y., F. A. Douds, Canton, Ohio, J. S. Strathers, Wheeling, W. Va., A. W. Haidle, Detroit, Mich., and Messrs. H. F. Hussey, G. M. Tyng, and W. C. McKinney, from the University of Michigan, Ann Arbor.

The Chicago Dental Society met as usual February 6th. Dr. Noyes read a paper on immediate root filling, in which he strongly discouraged the indiscriminate filling of the roots of teeth at one sitting. The essayist reviewed the work of the Illinois State Society at one of its recent meetings, coinciding in the main with the expression of this society. He had some very biting sarcasms for some of his friends in the Indiana State Association who advocated the immediate filling of roots under any and all circumstances. The discussion promised a very lively time for the members, but it was cut short by the announcement of another paper by Dr. Geo. J. Dennis on "Marginal Lines of Fillings." This essayist advocated the extension of the marginal lines of fillings upon the proximal surfaces of the anterior teeth for the prevention of recurring decays along these lines.

Drs. Harlan and Hinkins indulged in an interesting discussion regarding certain chemical reactions on the bleaching of teeth. The remarks became so interesting that the Society requested the gentlemen to prepare their thoughts and studies for the next meeting.

The Odontographic held its meeting Monday, February 13th, as usual, in spite of the efforts of the blizzard to prevent a quorum. The regular subject for the evening "Amalgams," was postponed until the next meeting, as the essayist Dr. P. J. Kester regarded the work he had done, as worthy of a larger audience. The members present (the stand-bys) discussed the best methods of advancing the work of the society. The evening was not altogether lost, for some excellent plans were adopted by which a larger number of the young men of the city could be influenced to become members and to take active part in the work of the society.

We see that the February number of the JOURNAL is even better than the January number, with which we were especially pleased. The JOURNAL ought to reach all practitioners of the whole country. ANON.

EDITOR'S NOTES.

ADVANCEMENT IN MECHANICAL DENTISTRY.

In looking over dental literature it is surprising how little has been written about the correct articulation of artificial teeth. Aside from the ideas advanced by Dr. Bonwill and those given in a general way by Dr. Haskell, we have had comparatively nothing presented. In a contribution on "The Articulation of Teeth," in this issue, Dr. Molyneaux presents the subject in a masterly manner and the article is of more than ordinary value. It will bear a great deal of study and we advise each reader interested in this branch, to give it their attention. The subject "Angles of force during the act of incising the food and mastication," taken up in the article, is one of vital importance and so far as we know has never before been presented to the profession.

The remarks made by Dr. Bonwill have direct application to the support of artificial dentures when the cutting edges of the teeth are in contact or in positive mastication, but there is nothing said about supporting the denture while the food is between the teeth and before the cutting edges strike. Dr. Molyneaux carries the matter farther and finds that it is absolutely necessary to consider the lines of force, or the mechanical forces during incisive function and during mastication, in order to support the denture before the cutting edges of the teeth come into actual contact.

The same attention should be given to the articulation in constructing bridge-work. If this principle as advanced by Dr. M. is thoroughly carried out in bridge-work, considered in relation to the supporting teeth or roots, we believe that there will be less liability of loosening of either the anchor teeth or fastenings of the bridge.

Dr. Molyneaux says: "The article of Dr. Bonwill on 'The Articulation of Artificial Teeth,' is the first and only literature of any scientific merit in this direction, and after an experience of over six years, carefully following his methods of articulating artificial teeth, we are prepared to state that our results have been universally satisfactory. If we expect to recover from the present state into which mechanical dentistry has fallen, it must be by the study and adoption of such theories as advanced by Dr. Bonwill. The subject is of too great importance to be passed without serious consideration, and the moment the intelligent part of the dental profession begin to adopt and apply, carefully, such methods, or require their mechanics to adopt them, they will at once raise the status of the prosthetic art, and a mechanical dentist will be recognized as a scientific man."

In a subsequent issue of the JOURNAL we shall present another article from Dr. Molyneaux regarding the "Anatomical Articulator" and how to use it.

A FINAL DECISION.

WHEN the General Medical Council of Great Britain passed a resolution not to recognize the diplomas of Michigan and Harvard, the question arose, whether the Council would refuse to license students, from these Universities, who were then just completing their course of study with a view of practicing dentistry in Great Britain. The question has just been decided. At the last meeting of the Council the Committee considered applications from the following persons, who hold American Dental Qulifications recognized by the Council prior to May 29, 1893, and who urge that they should be allowed to be registered on the ground of having commenced their course of study for these diplomas—in several cases long previously—in the belief that they would constitute registrable qualifications, and received no sufficient notice to the contrary:—

George William Field, D.M.D., Univ. Harvard; Edward M. Quinby, D.M.D., Univ. Harvard; G. Rufus Gray, D.D.S., Univ. Michigan; L. N. Seymour, D.D.S., Univ. Michigan; B. C. Hinkley, D.D.S., Univ. Michigan; E. D. Hinkley, D.D.S., Univ. Michigan; E. G. Snodgrass, D.D.S., Univ. Michigan.

Resolved:—"That these gentlemen be informed that they cannot be admitted to registration unless they can prove that they had passed through a curriculum equivalent to that demanded by the Medical Council from the Licensing Bodies of the United Kingdom."

NEW PUBLICATIONS.

The Funk & Wagnalls Co., New York, announce in a circular that the first edition of Volume I. of their "Standard Dictionary" has been covered by orders. Another edition is under way which the printers will push to completion as soon as possible.

BOOKS RECEIVED.

Transactions Illinois State Dental Society, 1893.

The Physician's Wife, and the Things that Pertain to her Life. By Ellen M. Firebaugh. F. A. Davis Co., Pub., Philadelphia. Price, cloth, $1.25.

Transactions National Association Dental Faculties, 1893.

Diseases and Injuries of the Teeth, by Morton Smale, L.D.S., and J. F. Colyer, L.D.S. London and New York: Longmans, Green & Co., Publishers.

SOCIETIES.

NORTHERN OHIO DENTAL ASSOCIATION.

The thirty-fifth annual meeting of this association will be held at Put-in-Bay Island, (Beebe House), Tuesday, June 19, 1894, at 2 o'clock, P. M., continuing in session three days. You are cordially invited to be present.

PROGRAM.

1. President's Address, S. B. Dewey, Cleveland, Ohio.
2. Immediate Root Filling, C. B. Mower, Wooster, Ohio. Discussion opened by C. H. Griffin, Ravenna, F. H. Waldron, Canal Dover.
3. Systemic Disturbances and their Relation to Dental Diseases, N. B. Acheson, Youngstown. Discussion opened by S. D. Stewart, Akron, J. H. Wible, Canton.
4. Correcting Irregularities of the Dental Arch, H. F. Harvey. Discussion opened by C. R. Butler, Cleveland, C. D. Peck, Sandusky.
5. Local Anæsthetics. General Paper, L. E. Custer, Dayton. *a.* Electricity, W. P. Horton, Jr., Cleveland. *b.* Obtund-

ing Sensitive Dentine, F. S. Whitslar, Youngstown. *c.* Injections for Painless Extraction, Chas. Buffett, Cleveland. Discussion opened by Geo. H. Wilson, Cleveland, J. R. Owens, Cleveland, Thomas H. Whiteside, Youngstown, J. G. Templeton, Pittsburgh, Pa., W. H, Whitslar, Cleveland.

6. Queries. Answered by F. S. Whitslar, Youngstown. All questions must be forwarded to the Corresponding Secretary before April 15.

7. Porcelain Work, J. H. Downie, Detroit, Mich. Discussion opened by D. A. Allen, Toledo, Grant Mitchell, Canton.

8. Things new in Dentistry, Henry Barnes, Cleveland. Discussion opened by Frank Creager, Fremont, J. R. Bell, Cleveland.

9. Voluntary Papers.

10. Incidents of Office Practice. General Discussion.

CLINICS.

Porcelain Crown and Inlay, J. H. Downie, Detroit, Mich.

Exhibition and Demonstration of Regulating Appliances, H. F. Harvey, Cleveland.

Cast Metal Denture, W. T. Jackman, Cleveland.

New appliances and Methods.

If you have any new instruments, Appliances, Methods, Models, etc., bring them with you.

[We understand that a number of appropriate vocal selections will be given during the sessions by a male quartet composed of practicing dentists.—Ed.].

VERMONT STATE SOCIETY.

The eighteenth annual meeting of the Vermont State Dental Society will be held at White River Junction, Vt., March 21—23, 1894. A cordial invitation is extended to all members of the profession. Thomas Mound, *Sec'y.*

BRIEFS.

— To stain beeswax a bright transparent color, melt the wax and add either annatto or turmeric. The addition of hard paraffin or spermaceti will harden it.—*Ex.*

— The importance of sterilizing the cavity when about to cap a pulp, is a matter too often overlooked.—*J. T. Tate.*

— Have no fear of discoloring teeth with nitrate of silver. The discoloration produced, if objectionable, can be easily removed by an application of iodide of potassium manipulated with soft pine or orange wood stick and pumice.—*Southern.*

— In cutting for removal of sensitiveness of dentine always cut with force and quickly. Light touches are objectionable and should be avoided. Heroic cutting is the remedy of all remdies, as you may and will learn to your satisfaction from experience. —*Practitioner.*

— That cases of infection do not oftener occur in dental operations performed without due regard to antiseptic precautions, does not prove that danger does not exist, but simply shows how wonderfully adapted the mouth cavity is to throw off infection. —*J. Mackenzie.*

— When the theory and practice of hypnotism is included in our medical curriculum, as it undoubtedly will be at no very distant day, it will be time enough for it to be put into general use. Until that time the dental profession can well afford to dispense with it.—*W. R. Newbold.*

— Porcelain faces should never be soldered, but should always be riveted, as the heat required in soldering, and the unequal expansion and contraction between the porcelain and the gold will either check the tooth or weaken it, so that liability to fracture is greatly increased.—*A. W. McCandless.*

— I like to have my plates come out finished on the side next the gum; hence, after shellacking, I cover the surface of the cast with No. 20 tin foil, and burnish it smooth. Next, I take a piece of the vulcanite in tweezers, dip it in chloroform, and paint over all the surface of the tin to which I wish the rubber to adhere,—and it does adhere.—*J. S. Latimer.*

— Crowns are a great success and a boon; bridges, except where only one or two teeth are required (and even these require the highest skill and sound judgment on the part of the operator, and cleanliness on the part of the wearer), are not permanent, do not repay the patient, and, it follows, do not ultimately redound to the credit of the dentist.—*T. Mansell.*

— I believe you can treat every pulpless tooth in the mouth satisfactorily with an emulsion of fluo-silicate alone (saturated solution). It is odorless and it is almost absolutely tasteless. You can sterilize any instrument you want to use about the mouth or antrum or root of a tooth with it. Instruments will be completely disinfected in ten minutes.—*A. W. Harlan.*

— HAND work is capable of versatility, adaptability and individuality in much higher degree than machine work, and where these are important, as in the nice shades of difference in the forms and contours of tooth restorations, the engine should be used sparingly and carefully, and much work be done by hand, even though the time required be longer.—*Edmund Noyes.*

— THE *Deutsche Medizinal-Zeitung* cites a formula employed by Dr. Blaschko, of Berlin, for hemorrhage. The formula calls for a solution of one part each of gallic acid and ergotine in a mixture of twenty-five parts each of distilled water and syrup of althæa, of which a teaspoonful is to be taken every two hours. The author has observed admirable results from the use of this agent.

— IT is not necessary for dentists to use thirty or forty remedies. They ought to have them on hand in case it becomes necessary for them to use them. Show me a man that always disinfects the parts or part he treats, and uses reasonably good sense in disinfecting around the roots of teeth, and does not put a disinfectant in his root fillings, and you will find that he is pretty successful as a practitioner of dentistry.—*A. W. Harlan.*

— IN cigarette smokers I have observed a form of gingivitis that is peculiar, in that there is a purple line at the free margin of the gums, resembling that found in lead-poisoning. There seems to be a peculiar selecting power in these cells, whereby such substances as potassium iodide, mercury, and poisonous substances in the blood are taken up, and this may be the means of determining the presence of diseased conditions by observing physicians.—*F. Sumner.*

— WHEN a corundum wheel is used the particles are forced up under the gum; this is readily removed by a spraying apparatus. I use a spray more than I do a syringe. When cleaning the teeth of tartar some pieces will get loose and lodge under the gum; the spray effectually removes them. The same result follows the use of pumice refuse. The patients like it. Every dentist should get a spraying aparatus, and he will never be without it afterwards.—*R. Ottolengui.*

— WHERE I have used a metal cap for the anchorage of a bridge at one end, instead of cementing the bridge in at the other end, supported by a cuspid, for instance, I have cut the tooth and put in a very hard gold filling, making just a little depression in it. Drill a little cavity in the cuspid, and pack the gold very hard in it, and countersink it, point it, and let it rest right in there. There is no chance of its decaying the tooth. It has worked very nicely in every case that I have tried.—*F. A. Peeso.*

— IN treating pyorrhea alveolaris I have obtained better results by directing patients to rub their fingers on the gums, and using Listerine, than with anything else. Many cases have been kept in good condition in that way. You do not always need a syringe to remove the food deposited in those pockets. The constant accumulation of food and of micro-organisms continues the disease, and the use of the fingers to rub the gums I find to be an excellent substitute for the syringe.—*J. B. Littig.*

— IN making examinations, and in operating on the temporary teeth, one most important fact should be kept in mind,—namely, that, if possible, no cavity should be allowed to become so large as to expose a pulp. This should be looked after in order to avoid the danger of future abscesses, as well as to insure the natural absorption of the roots on the approach of the permanent teeth. Of course it is well known that the roots of dead teeth are not absorbed, as is the case with the living ones.—*S. G. Perry.*

— DO not criticise things unless you have studied them. Some bridges should be put in with fillings, both gold and amalgam, some on capped roots, and some onto gold crowns. Nine out of ten of the bridges that I am putting in are single teeth in the anterior part of the mouth. I advocate permanently attached bridges in nine out of ten of the bridge cases that come to my practice. In the tenth case, a removable bridge might be better, for certain reasons which are obvious to you all. The ideal bridge cannot be any one thing in particular. It must be ideal for the case.—*E. P. Brown.*

— In regard to burnishing the edges of a band to the root of a tooth, Dr. Ottolengui says: The more you burnish a straight band on one side, the more it will bulge out on another. That is not the kind of band to make for a tooth. The normal gum-margin of any molar is practically the same, although most teeth vary in shape or size. As the doctor has said, the band must be made by first fashioning it with anything that you use as a pattern. That pattern will not have parallel sides, but curved lines. The parts which must be burnished to the tooth can be burnished without altering other parts of the band, because they extend below the line which is the true circumferential line.

OUR AFTERMATH.

Died.—Dr. Henry Snowden, at his home in Baltimore, Md., January 16, 1894, aged 74 years. He was senior member of the firm of Snowden & Cowman, publishers of the *American Journal of Dental Science.*

A Munificent Gift.—The heirs of Senator Jacob Moleschott, the famous explorer, teacher and physician, have given his valuable library, containing over 40,000 volumes of medical, philosopical and scientific works, to the Academy of Turin, where the dead man began his labors.

Phenomenal Number of Teeth.—Dr. O. Hildebrand, of Goettingen, reports in the *Medical Record* the case of a boy of 14 who, since the age of 12 years, has had 150 to 200 teeth of various sizes removed. A year and a half later 17 more were removed, with evidences of others coming.

Manufacture of Cocaine in Peru.—The manufacture of cocaine is carried on at Callao by Mr. Bernard Prüss, the leaves used being produced in the province of Huanaco. The quantities exported during the year, 1892, are given as follows: London, 2672 pounds; Hamburg, 932 pounds; and New York, 221 pounds, the total weight of 3825 pounds being valued at £23,422 10s.—*Consular Report, Brit. Journal.*

A curious incident occured recently in the theatre, at Havre. After the performance of the first act of the tragedy, "The Pirates of Savannah," the attendants appeared and begged the audience to remain seated. The cause of this curious request was soon apparent. A lady sitting in the front row of the second balcony and leaning over the rail had sobbed so violently that she had ejected her dentures, which had fallen into a passage below. After much searching the denture was recovered and she is said to have remained to the end of the performance, and to have sobbed on but with more circumspection.—*Record.*

Death after Cocain Injection.—The following appeared in a Detroit daily of Feb'y 2,: "The sudden death of Tom Adams, a Troy farmer, occured a day after he had his teeth pulled by a traveling dentist. It is said that the dentist had been drinking hard and was totally unfit for business. However, this may be, he was badly rattled during the operation.

Mr. Adams wanted two teeth extracted. "If you hurt me," said he, half gruffly, half in fun, "I'll throw you out of the window." The dentist was nervous and frightened and bound to deaden the nerves in some way. He broke two needles while administering 10 injections of cocaine. The two teeth were extracted, but the big, burly farmer dropped dead the next day as though he was shot."

[A correspondent referring to the above, would like an expression from dentists as to the probable cause of death; whether due to the poisonous effect of the mixture administered, to the possibility of forcing air into a vein, or what?]

THEY DO THINGS BETTER IN GERMANY.—A vulcanizer having burst in Bremen, the police of that city, have issued the following notice to all dental practitioners:—"A short time ago a vulcanizer belonging to a local mechanic exploded with such violence that considerable misfortune would have resulted but for a favorable coincidence of circumstances. The Director of the Police feels, therefore, obliged in future only to allow the use of vulcanizing apparatus for the hardening of dentures, when they are provided with a controlling regulating gauge and sufficient safety valves. Should the valcanizer in your possession be unprovided with these safety valves you are directed to submit the same to the Inspector of Factories at latest by January 1st, 1894." A sensible notice this which cannot but be productive of good. A vulcanizer is not exempt from the rule that everything has an end, and as years go by the number of those which are worn out must considerably increase. Fortunately the Britisher's weakness for something solid stands him in good stead in the question of vulcanizers, very few accidents, we believe, have happened with those of home manufacture.—*Record.*

SOME REASONS FOR DAILY EXERCISE.—1. Any man who does not take time for exercise will probably have to make time to be ill.

2. Body and mind are both gifts, and for the proper use of them our Maker will hold us responsible.

3. Exercise gradually increases the physical powers, and gives more strength to resist sickness.

4. Exercise will do for your body what intellectual training will do for your mind—educate and strengthen it.

5. Plato called a man lame because he exercised the mind while the body was allowed to suffer.

6. A sound body lies at the foundation of all that goes to make life a success. Exercise will help to give it.

7. Exercise will help a young man to lead a chaste life.

8. Varied, light and brisk exercises, next to sleep, will rest the tired brain better than anything else.

9. Metal will rust if not used, and the body will become diseased if not exercised.

10. A man "too busy" to take care of his health is like a workman too busy to sharpen his tools.—*Exchange.*

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CONTRIBUTIONS.

A MODE OF ATTACHING TEETH TO AN ALUMINUM PLATE WITH RUBBER.

BY S. B. DEWEY, M.D., D.D.S., CLEVELAND, O.

SWEDGE up the plate, fit, take bite and articulate the teeth the same as for gold. Wax up ready for the flask, try in the mouth, and if found correct have prepared some pins made as follows: Take platinum wire 19 gauge, cut to desired lengths. On one end of the pins flow a small bulb of gold solder. This is to make a head on the pin, which is made in the following manner: In the small bench anvil is a hole of the right size. With a small corundum point countersink the hole in the anvil to size of ordinary pin head. Place the pins with bulbs in the hole in anvil and drive bulb down into the countersink until the head is formed. About seven of these pins are required for an upper or lower case. With a drill size of pin placed in the engine, drill through wax and plate behind the last molar. Next drill through wax and plate on the palatal side of the teeth at the point between molar and bicuspid; next between bicuspid and cuspid; then between the centrals and so on around to the heel of the plate again. This brings the pins in the thickest part of the rubber, and at such points as not to interfere with the teeth. Now take a rose

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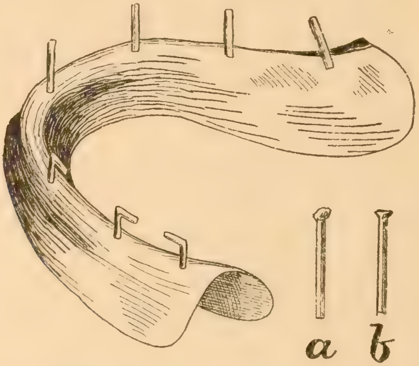
bur of such size as will make countersink to correspond to head of pin, and countersink the holes in the plate on the palatal side. Put the pins in place, pushing them through until the head fits the countersink, and if the head of the pin projects beyond the plate grind it down until even with the plate. If the pins are of the right length, they will come flush with the wax rim behind the teeth. The case is now ready for flasking, which is done just the same as for gold with rubber attachment.



The above cut shows the case with pins in place. Three of them being properly bent and the rest standing as comes after separating the flask.
" A " represents pin with bulb of solder.
" B," pin completed ready for case.

When the plaster is hard remove the wax and you find the seven pins standing erect on the plate. Now take flat nosed pliers and bend pins at right angle forming a foot. Have this foot project toward the front or back of the mouth, and never across the arch, because if crossing the arch they might come in contact with the teeth when closing the flask. Pack and vulcanize as in other cases. The rim of the plate may be roughened on the edge before packing, making a closer joint between rubber and plate.

We claim this the strongest attachment for aluminum yet offered, and easily applied, it being impossible to pull off the rubber rim without pulling the heads of the pins through the metal plate. These pins may be applied to a gold plate with rubber attachment, where you wish to extend the rubber and put on another tooth, without removing the teeth already on the plate to solder on new pins for the rubber. Indeed it was in repairing a gold plate that this method was suggested to my mind.

THE RESTORATION OF DISCOLORED TEETH.*

BY J. F. STEPHAN, D.D.S., CLEVELAND, O.

In bringing this subject before the society for discussion we will confine ourselves more particularly to those teeth discolored from devitalized and decomposed pulps.

True, the normal color is oftentimes changed by depositions upon the surface as in "green stain," berry stain, etc., or by caries, but these do not concern us so much as they are generally easily restored by mechanical means.

The discoloration by the decomposition of the pulp is produced through the slow disintegration and fermentation of the organic material. We will probably find sulphur and iron compounds, and carbonized pulp tissue among the most potent resulting elements causing this change of color.

We all recognize the necessity of restoring these teeth to their natural color and therefore should use the greatest care in selecting our remedy and performing the operation so as to obtain the best possible results. The ratio of good results in bleaching will be in proportion to the vitality of the tooth.

In preparing the tooth to be operated on, adjust the rubber dam over it and its immediate neighbors. Wash the crown and cavity with a solution of some soluble antiseptic as boracic acid, biborate of soda, etc.

All decay and fragments of pulp, as well as every evidence of putrefaction must be removed from the cavity and root canal but discolored dentine if hard, need not be cut away. The more nearly we cut to the enamel the more certain is the tooth to lose its translucency.

The root of the tooth to be bleached must be filled for one-third of its length. I say one-third, because that portion of the root at the neck of the tooth must also be bleached or it leaves a dark shadow at this point. As the discolored materials are found within the dental tubuli, we must not ceil them with a coagulum or a filling material.

This is to allow the free access of the gases produced by our bleaching agent to the contents of the tubuli.

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*Read before the Cleveland Dental Society, March, 1894.

We depend upon oxygen to perform the bleaching, therefore our bleaching agent must eliminate this gas directly or indirectly in sufficient quantity to enter the tubuli and decompose or oxidize their contents, rendering them colorless or white. If chlorine is eliminated by the agent it combines with the hydrogen of the water contained within the tooth at the time of bleaching, forming hydrochloric acid, thus liberating the oxygen.

In selecting such a remedy we must also see that it is one that will in no way impair the integrity of the tooth structure.

An examination of the available remedies leads us to consider peroxide of hydrogen, pyrozone, Labarraques solution of chlorinated soda, oxalic acid, peroxide of sodium and aluminum chloride.

The method of applying peroxide of hydrogen, Labarraques solution of chlorinated soda, and pyrozone, is to saturate the cavity with the medicament until the tooth assumes the original shade, which is generally accomplished in about five minutes.

No steel or silver instrument should be used in applying Labarraques solution of chlorinated soda as the resulting discoloration makes a hopeless case of it. Instead, use gold, platina or bright nickel instruments for this purpose.

In the use of oxalic acid as a bleacher, the cavity being prepared as before, is washed with ammonium hydrate, thoroughly dried and the acid applied in a saturated solution. Great care is taken not to allow it to come in contact with the enamel. After remaining about five minutes, it is removed and the cavity washed with ammonium hydrate to neutralize any acid which might escape removal. Bleaching is accomplished in from one to three applications.

The next compound brought to our notice is peroxide of sodium. It is the chemical analogue of peroxide of hydrogen but possesses 20% of available bleaching oxygen, as against 3% in the ordinary peroxide of hydrogen solutions. It is a white solid, caustic and strongly alkaline, and should not be placed in a tooth with a living pulp. In strong solution it is a solvent of animal matter as well as a saponifier of fats and oils, properties which are to be desired.

For bleaching teeth the dentine is saturated with a strong solution which is followed with a treatment of dilute acid preferably hydrochloric acid (10% solution.)

When applied to the tooth the peroxide of sodium comes into contact with water, forming caustic soda which dissolves the albuminous and fatty matter present. When the acid is applied this caustic soda is neutralized and the remaining peroxide of sodium with the acid forms common salt and peroxide of hydrogen.

The strong solutions are applied on pledgets of asbestos fibre, as cotton is rapidly destroyed by them. Results are obtained in a very few minutes, in fact the change of color may often be seen to pass over the tooth in a well defined line.

It will be seen from the nature of this compound and the resulting reactions that we have in it a most excellent bleacher.

We will turn our attention to the last of our available bleachers aluminum chloride which is a white crystalline substance.

After the cavity has been prepared and thoroughly dried as before, it is filled with a small quantity of aluminum chloride. This is moistened with peroxide of hydrogen and allowed to remain five minutes, after which it is removed and the cavity washed with a clear solution of biborate of soda. If this method will bleach it will generally accomplish that end in one application.

The bleaching is brought about by the rapid liberation of chlorine from the aluminum chloride in the presence of peroxide of hydrogen, forming hydrochloric acid and water, leaving unsatisfied hydroxyl and chlorine. I prefer this method to all others. Chlorinated soda may be used to moisten the aluminum chloride if peroxide of hydrogen fails to accomplish the bleaching.

The tooth having been restored to its natural color, the canal and pulp chamber should be filled with oxychloride of zinc cement. Great care should be exercised to remove every particle of pulp tissue from the corners of the pulp chamber occupied by the cornua of the pulp. Carelessness in cleansing and perfectly filling these points will often result in a return of the discoloration after the tooth has been bleached. The permanent filling must be made and the bleaching done at the same sitting.

To obtain opacity where the dentine has been cut away from the enamel along the labial margin in the anterior teeth the rubber is applied and the tooth thoroughly dried as for bleaching.

The inside of the cavity is painted with a coat of copal ether varnish, using for this purpose a thoroughly and carefully bleached camel's hair brush. Cut a piece of thin white glazed paper of the right size and shape to fit the cavity; varnish one side with copal ether varnish and lay that side against the labial side of the cavity, carefully burnishing it into place, being sure not to leave creases or folds, as they will cause a dark line to show through the enamel. Now cover this very carefully with oxychloride of zinc cement and place in the permanent filling after allowing the cement to thoroughly sweat out any moisture.

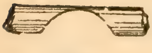
We may spend a few moments profitably considering those teeth discolored by amalgams.

The discoloration of teeth by amalgams, not copper amalgams is generally due to the sulphurets. The theory of bleaching them is to dissolve and wash out the substance that discolors them. The tooth is prepared and thoroughly dried as in all other methods of bleaching. We then proceed to thoroughly wash the cavity in order to dissolve the substances within the tubuli, first with an alkaline solution as biborate of soda, or sodium fluosilicate, fluid, silicate, etc.; secondly, with chloroform; thirdly, sulphuric ether, then absolute alcohol, the alkaline solution and lastly with peroxide of hydrogen, repeating this process until the tooth assumes its natural color. This operation requires from thirty to forty minutes.

If this method has failed, decompose chloride of magnesia or chloride of tin with peroxide of hydrogen within the tooth.

A SIMPLE MATRIX.

BY W. H. WHITSLAR, M.D., D.D.S., CLEVELAND, OHIO.



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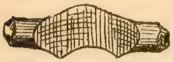

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A useful matrix may be made quickly by the use of copper wire in the following manner: Take copper wire, the size of which is here illustrated, and laying it upon the horn of your anvil, with a sharp blow of the hammer a concavity is produced upon one side of the wire, and naturally it would be flattened by the smooth face of the hammer upon the opposite side. The size of the concavity may be regulated as desired either with hammering or use of half-round file. The ends of matrix serve as wedges. For a fraction of a cent these matrices may be produced equal to those that require a number of pennies to buy. The illustrations are self-explanatory.

SOME OF THE DENTAL SEQUELÆ OF INFLUENZA.*

BY R. T. OLIVER, D.D.S., INDIANAPOLIS, IND.

The object of this paper is to set forth in a meagre way some of the evil complications that have been noticed to occur in the mouth and adjacent organs, relative to the effects of the grip.

Influenza is an epidemic that has ravished the entire civilized world at various times during the last five centuries, but which has had its worst and most pernicious effects within the last hundred years. During the years of 1780–1–2 and from 1859 to 1861, this country was besieged with several attacks of influenza, which, as compared with the epidemic of 1890–1–2 were mere bagatelles, yet have a prominent place in the pathological literature of to-day. During the latter attack the entire country, from the great lakes to the Gulf, and from the Atlantic to the Pacific was overrun with this hustling, energetic microbe, the strepto-bacillus of Roux, which attacked the populace of all classes, high and low, white and colored, male and female.

During the latter epidemic, the causes, effects, treatment and sequelæ have been noticed, carefully watched, experimented on, and investigated in such scientific manner that the world at large, and especially the medical profession will be in the future better able to cope with the dread enemy, whenever it shall again appear at our doors.

According to the latest scientific tabulated report, the grip is by far the worst and most fatal epidemic that has ever invaded the earth's populace since the world began, and during the present epidemic, in Pennsylvania alone, the reports of Lee show that there were 1,120,000 cases, with a mortality report of 7,880, or at the ratio of one out of every 142 cases. Therefore it is not strange or wonderful that so general and fatal a disease should show so many various complications of pathological conditions as after effects, or sequelæ. I will not attempt to cover the causes, duration, treatment, and general after effects, but simply confine myself to a few of the sequelæ that can be found by close scrutiny of the mouth and contained organs.

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* Read before the Indiana State Dental Society, 1893.

CONGESTION.

The first symptom of grip in the mouth might be called "a cold," that is, the mouths of the mucous follicles are closed, simply by contraction from the excessive thermal changes, then the follicles can not perform their functions, that of secreting mucus. There is consequently a hyperæmic condition or an overplus of blood to that part that is not used, which in a short while will stagnate, or at least become very sluggish in its circulation. These symptoms will produce a dry, harsh, reddish condition of the lining of the fauces and sides and roof of the mouth, which frequently the patient will complain of. This may be called the initial step or the first advance of the grip, and if not properly attended to by constitutional treatment and local applications, will eventually terminate or complicate with other serious conditions that will be hard to eradicate. If this condition is allowed to remain without proper attention, the inflammation and congestion will travel on by means of continuity until the gums at the gingival border are affected. After the initial stage has taken hold of the gum, you will sometimes notice that the festoons are beginning to swell, puff out and take on a brilliant carmine color. There will be complaint of heat, soreness, pain upon pressure, which will increase as it goes on, until the gums swell, sometimes even with the edges of the teeth. This is caused by the suppuration of the congested mucous follicles, which have started a perfect manufactory of a hybrid pathological cell, called a pus cell, and which will eventually fill all the space round about the center of stagnation. Now we notice that the gums are of a dark red, the touch extremely painful, the patient not able to eat and very restless.

Now it is that the practitioner must act immediately, but with caution. The first thing to do is to thoroughly evacuate the pus cavities, either by lancing, as the advanced stage calls for or by scarification in the primary stages. Establish a thorough drainage of the parts affected, use strictly antiseptic measures in the operation, and then put the patient on a mild antiseptic mouth-wash, to be used every four hours, with, possibly, counter-irritants and constitutional sedatives or opiates.

If taken in the first stage, a good antiseptic mouth wash, such as Listerine, with perhaps a counter-irritant, is all that is necessary, but if allowed to go on until congestion is well marked, with pain and some swelling, then scarification should be resorted to, and at the next sitting the entire congested surface should be coated with some mild escharotic, so that it might slough off and establish new orifices for the otherwise clogged mucous follicles. Of course I only make the attempt to specialize on the local treatment allowing that the patient has a regular practitioner to look after the general effects of the disease, and that he has treated with proper constitutional remedies.

The grip microbe seems prone to attack all mucous and serous surfaces, but more especially has an affinity for the mucous surfaces, and this is the reason why the specialists in medicine have had such a run of severe cases involving this membrane. It is because all mucous-secreting surfaces are easy of infection, owing to the many follicles, which act as pockets or receptacles.

This is the reason there have been so many exaggerated cases of catarrhal conditions of the nose, throat, mouth, urethra and vagina during the last few years.

PYORRHEA ALVEOLARIS.

In all cases of pyorrhea where the patient is attacked with the grip, you will notice immediate exaggerated symptoms of the trouble, and will find that the ordinary means of treating it are practically of no avail. There will be a larger surface of congested tissue, sometimes destroying the circular ligament. There will be quite a marked increase in the amount of the discharge, the teeth will become hypersensitive and loose, with well marked septic pockets all around. It will be found useless to try to cure this disease while the general system is battling with grip, so the only thing to do is to keep the parts as nearly asceptic as possible and evacuate the pockets regularly.

GINGIVITIS AND PERICEMENTITIS.

These two pathological conditions, that travel hand in hand as sequelæ of the grip, are prone to follow the first attack of general congestion of the mouth. Gingivitis is easily detected by the marked red swollen rings around the necks of the teeth, with perhaps a thin colorless viscid discharge of serum, which, if examined microscopically, would reveal, besides the streptococcus of Roux, white blood corpuscles intermixed with a few of the red, with a large number of mucous and epithelial cells, and some of the larger pathological cells produced by congestion.

This trouble, if allowed perfect freedom, will terminate in a chronic condition, resembling that of pyorrhea alveolaris in every respect except the nature of its discharge and its virulence. Pericementitis is liable to be superinduced by this general inflammation or primary step of the grip. There will be a thickened swollen condition of the membrane, that will cause at first an uneasy sensation whenever the teeth are brought into occlusion. This sequelæ is characteristic in that no especial tooth is affected, but all the teeth on *one* or *both* sides of the mouth seem to possess identical symptoms. I have had patients complain of all the teeth being so sore that mastication was almost impossible, owing to the extreme pain occasioned. The only remedy for this condition is constitutional treatment with local counter-irritants, and antiseptic washes.

GENERAL ORAL CATARRH.

This condition, although sometimes present in mild form, from disturbances of the stomach and mucous surfaces, is greatly exaggerated by the introduction of any parasitic element, especially the microbe of the grip. Its initial symptom is a general hyperæmia of the entire mouth, which seems to break up, forming several patches of excessively red, puffed out, hypertrophied mucous blotches. This form can be eradicated, if taken in time, and treated locally with astringent antiseptic washes and constitutional remedies, but, if not arrested, will quickly increase, and terminate either in catarrhalis mucosa, stomacace, ulitis ulceroa, or alveolar ulcerative stomatitis. Catarrhalis mucoso has the appearance of small round or oval red patches over the surface of the membrane, differing in size from the head of a pin to a small pea, the center somewhat indurated and of brilliant red, with a darker red line around the border, the spaces between patches inflamed, hyperæmic and tender. Constitutional treatment, iron, quinin, etc.; local, astringent antiseptic washes and mild escharotics. Stomacace differs only from the foregoing in that it is much more exaggerated in appearance. The patches, instead of being round or oval, have jagged edges, are somewhat raised, have a pearly whitish appearance in the center, and a yellowish brown periphery. This condition rapidly destroys the membrane if not immediately arrested, eating it away so rapidly that two or more of the patches coalesce or run together, forming a large ulcerating sore. The symptoms are dry, harsh surface of mouth, redness, swelling, pain on pressure, feverish condition of patient, and after hours of comparative quiet a thin whitish mucous coating over the entire mucous surface.

This is infectious, and is sometimes communicated to the lips by continuity, when the sore is often mistaken for chancre and other evil symptoms. Again, exaggerated cases will communicate to the alveolus, forming large purulent pockets which will eventually destroy the alveolar process, producing necrosis of bone, which must either exfoliate in sequestra or be removed by surgical means. Again it will travel up the root, destroying all soft tissues until there is a thick purulent discharge, resembling exaggerated pyorrhea from around the tooth; sometimes denuding the entire root and forming pockets in the alveolus at the extremities of the roots, to the extreme liability of alveolar abscess, carious bone, and other kindred affections. The treatment for such cases is the removal of all diseased bone and denuded tissues, the establishment of perfect drainage, antiseptic precautions, constitutional treatment, strong escharotics (5% solution argenti nitras will not be too strong), cauterizing the deep seated pockets, then astringent antiseptic mouth-washes four times daily. If there are any calcific deposits between or around the teeth, these must necessarily be thoroughly removed.

ERUPTING WISDOM TEETH.

During the eruption of the dentes sepientiæ, or wisdom teeth, it will be noticed frequently that the overlying gum tissue becomes red, swollen, and extremely sensitive to pressure. In ordinary cases this may be thoroughly removed by lancing or scarification; but if a case of this kind presents while the patient is afflicted with la grippe, trouble may be expected, for it is an established fact that all diseases seek and locate in the most vulnerable or weakest places. You will find that the streptococcus or bacillus of Roux will invade the parts, that there will be an excessive hyperæmic condition with much swelling, redness, and pain, which will not confine itself to the overlying gum tissue but will communicate to the adjacent parts, and soon, if not arrested, will involve the gingival border of the second molar, the pericementum, and even the alveolus around the third molar. There will be a central or nucleal part usually over the overlying gum tissue, or just behind it, that will break down, owing to the static condition of the blood, and there will commence the formation of pathological cells infiltrating the parts with thick virulent pus. This condition will increase until we have a well defined case of apthous stomatitis, which probably is the most common of any of the severe grip complications in the mouth. The treatment is all local, and is through evacuation of pus and congested blood, and the use of strong cauterizing agents. Practice antisepsis, and remove all the overlying gum tissues, so that there can be no stagnation caused again from undue pressure.

PULPITIS, ODONTALGIA, AND SENSITIVENESS OF DENTINE.

There has been a great deal said and written about troubles of this kind, and I have been, perhaps, particularly fortunate in having had, and being able to note, a few interesting cases during the late epidemic. I will venture the statement that there *have been more pulps devitalized* during the last two years (owing to the prevalence of la grippe), than there have been in the last five years previous, not taking into account the vast numbers of teeth that have been sacrificed. It seems that the dentine assumes more of a sensitive condition under the effects of la grippe, that the pulp becomes hypersensitive to a marked degree, so that the mere excavation of decay is very painful.

The fibers of Tomes seem to act as prolongations of the pulp as far as sensitiveness is concerned. The patient can hardly stand the process of excavation, and a great many times even after the insertion of the filling, the slightest thermal change transmitted through the metal filling causes such intense pain that the filling will have to be removed, and a capping of some non-conducting material placed next the pulp.

By far the largest majority of cases where exposed pulps have been capped since the grippe has attacked us, *have been utter failures.* Why? The first but rarest of these causes is the ænemic condition of the blood; the lack of nutrition producing slow death of the pulp caused by the debilitated condition of the patient. The second and commonest cause is hyperæmia of the pulp, congestion, engorgement with subsequent strangulation and death, producing excessive pain. The condition of affairs has become so prevalent in my practice of late, that under *these circumstances* I never waste my time or hazard the future welfare of my patients by trying to save the life of an exposed pulp, always resorting to a devitalization and eradication in these cases. Frequently patients present themselves to us suffering from excessive pain in nearly all the teeth of either jaw, telling us that at times the pain resembles that of "being on edge," and again defined as a sort of neuralgic pain. This condition is undoubtedly caused by the hyperæmic congested state of the pulp, and if not given proper attention locally by counter-irritants and constitutional sedatives, etc., may produce a serious condition, terminating either in the death of pulp, growth of secondary dentine, pulp-stones, or a chronic neurasthenic condition of that immediate portion of the trigeminous nerve.

NEURALGIA.

Neuralgia of the fifth pair and its anastomosing branches has frequently been noticed as a sequelæ of grip. This also has to be combatted by the usual remedies.

ANTRAL COMPLICATIONS.

To the average practitioner of dentistry the antrum Highmori anum is as a "sacred place of the gods," and is looked at and thought of "with fear and trembling," because, while he realizes that this cavity comes within the province of his profession, yet, through timidity and lack of confidence in himself, he sacrifices his opportunities for investigation and experiment by sending the patient to a throat specialist, who, perhaps, is not more skilled or successful in its treatment than himself. For this reason alone, I recommend that every dentist who is fortunate enough to have any of the different antral complications presented to him, should by all means accept the case and improve his opportunities, so that in the future he may be able to cope with any similar case that may be presented.

The text-books and prominent writers tell us that fully seventy-five per cent. of all antral troubles arise from some pathological condition in the teeth. As an argumentative question, "Is this sufficient reason why a dental surgeon should not prove himself able to treat successfully all trouble arising from the organs that are under his especial care?" aud again, "Why should he not sustain the high professional standard, and show to the aristocratic laity and unsympathetic practitioner of medicine that he is worthy of the degree of Doctor of Dental Surgery?" It has been noticed that the grip has caused a great many disturbances in the teeth, and it is therefore not wonderful that there should be, correspondingly, a large number of antral complications as a result, which being the case, has made this triangular cavity much more prominent to the specialists of surgery as an operative point than ever before. The least dangerous and by far the most frequent trouble the dentist will have to combat in the antrum is empyema, which during the late epidemic of la grippe, has been noticed to occur frequently after bad cases of abscessed teeth, alveolar abscess, acute pulpitis, with death of pulp, accidents from the protrusion of nerve instruments through apical foramen, and kindred troubles of all the teeth whose roots invade the floor of the antrum.

The trouble is easily detected, and a diagnosis made, from the patient complaining of pain on the affected side (sometimes called by them face-ache), pain under the eye, a sense of fullness and weight under the malar bone; by a discharge from the nostril, when the head is inclined to the opposite side; by the introduction of a small electric light into the mouth, which, when the room is darkened and the lips closed, will show a dark spot, while the healthy side is translucent; and sometimes by the presence of a small tumor in, or just posterior to, the canine fossa of the superior maxilla bone. The first thing to do in these cases is to find and remove the cause, then to open up and establish thorough drainage of the antrum. To do the latter properly depends on what measures are resorted to in removing the primary trouble. If the tooth is removed, use the chisel or bur and enlarge the socket until you have made a perfect drain from the floor. This will be found the easiest way to evacuate the antrum; but if it would be imprudent to remove the tooth, then an external opening should be made in the region of the space between the first bicuspid and first molar, well down on the alveolar process. The opening is made with either a chisel or bur, the latter being the better, and should be made large enough to allow easy access of instruments. I usually use a large fissure bur about the size of a crow's quill, which I have previously ground down on the end to a spear point. With this bur I can drill into the antrum, and without removing it, can widen the opening by lateral pressure.

After thorough evacuation, the antrum should be washed out with tepid water, then flushed with hydrogen peroxide, which will remove all pus from the smallest pockets, and interspaces; afterward, the lining membrane of the cavity should be thoroughly covered with finely pulverized boracic acid blown in with an inflator.

Some practitioners use iodoform, but the objection to it is its vile odor; and then, it has no more therapeutic value than boracic acid. Great care should be taken to observe that all parts of the cavity are drained thoroughly. Frequently there are bony spicula growing across the antrum so as to form partitions, and these small rooms (so to speak) may not be properly drained or washed. If the partitions are detected, they should be broken up enough to allow all drainage to have free egress. The treatment before mentioned should be resorted to twice daily for a few days, until the acute symptoms disappear, and then once daily until the catarrhal condition is eradicated; then allow the opening to close, or, if ueed be, effectually close it by a plastic operation. The old-fashioned way of keeping the opening from growing together was to insert a gold or platinum tube into it, which was attached to a plate or by clasps to a tooth. This has been shown to be bad practice from the fact that nearly all tubes were unclean, and seventy-five per cent. were too long, and stuck up beyond the floor of the antrum so far that perfect drainage was impossible, really doing more harm than good. It will be found easy to keep the orifice open by a thorough cauterization of the edges by silver nitrate or some of the stronger escharotics. If after the trouble is cured the opening fails to close, even after a plastic operation, then an examination of ths nose should be made to see if the natural opening is closed. If it is closed by some hypertrophic growth, it should be treated with an astringent wash to reduce it, or if this fails, and it is found that there is a chronic thickening of the membrane, then it is usually the best plan to make an artificial opening well down to the lowest plane in the inferior meatus. This is resorted to because the artificial opening will never close unless there is an opening into the nose, from the fact that the antrum must have drainage for its contained mucus, which in the normal condition is wafted by the cilia of the epithelial walls up to the natural orifice in the superior meatus.

ORTHODONTIA.

In my estimation, it would not be prudent to try any cases of regulation while the patient was suffering from la grippe or its sequelæ, merely from the fact that the consequent inflammation, congestion and absorption of the tissues consequent to the operation, would only give the microbe firm foot hold.

RUBBER SORES.

The frequentness of so-called rubber sores has also been noticed to occur during the epidemic, caused primarily from the heat of plates and irritation of mucous membrane, from the sulfur and mercury in the rubber. Great care should be taken to keep the mucous membrane in good condition by use of astringent washes and antiseptics, with complete rest from wearing of plates.

PAROTIDITIS.

Parotiditis and inflammation of the other salivary glands, the sub-lingual and sub-maxillary, have been of frequent occurrence, due by the inflammation carried to them by continuity. They can be diagnosed by pain, swelling, redness, and increased flow of saliva. Treatment: Anodynes, astringent washes, constitutional treatment, and avoidance of all sour substances, which have a tendency to produce an excessive flow of saliva.

DANGERS OF ANESTHETICS.

The dentist should be very careful in the indiscriminate use of anesthetics, more especially during an epidemic of influenza, or in case of a patient that is just recuperating from its effects; first, because of the excessively anæmic condition of the blood owing to the lack of rich red blood corpuscles, and secondly, the nerve centers of respiration are greatly dimished in strength, owing to their weakened condition, after a severe attack and hard-fought battle with this dread microbe.

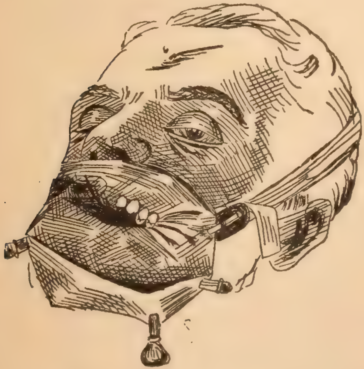
MERCURIAL SALIVATION.

This trouble, when presented by a patient who has been recently affected with grip, is sure to show exaggerated forms, and after the calculus is all removed, the loose gum replaced, and strong astringent washes are used frequently, there will yet appear thin yellowish-white mucous patches over the membrane. This is only cured by persistent use of mild escharotics, antiseptic washes, and constitutional treatment, with perhaps the surgical removal of some of the hypertrophied gum and possibly the upper edge the alveolar process.

A CONVENIENT GOLD CATCHER.

BY L. P. BETHEL, KENT, OHIO.

One does not realize how much gold is wasted in making and finishing gold fillings—now and then pieces of foil do not adhere, and particles trimmed, filed or cut off by finishing strips, find lodgment on the napkin, patient's coat or dress, or carpet of the operating room and very little of this waste gold is saved ordinarily. During the past year I have derived much satisfaction from saving this waste gold by the simple means of turning up the lower end of the rubber dam and fastening so as to form a pocket in which all the gold, whether coarse or fine, finds lodgment.



The drawing represents the rubber dam in place, the lower corners brought up to desired height and fastened with ordinary spring neck scarf fasteners. If the double edge at the sides is left hanging straight, of course an opening exists; this may be overcome by placing an additional fastener at lower edge of the pocket on either side; or, the corners may be doubled back and fastened.

In order to make the pocket stand open when in place, the corners should be fastened inside of the outer edge of the dam in order to make the outer section of the pocket looser than the inner. In some cases it may be found necessary to hang a rubber dam weight on the outer lip of pocket to keep it well open; or, take a strip of tin, or other suitable material, about one-fourth of an inch wide, fold once in lower edge of dam, before forming pocket, bend to curve desired, carry edge of dam with enclosed strip to proper height and fasten as above indicated. This forms a stiff edge to the outer lip of pocket and holds it open. It is easily constructed, effective, and not annoying to the patient.

THE RELATION OF DENTAL CARIES TO CERTAIN FORMS OF INDIGESTION.*

BY E. F. WILSON, M.D., COLUMBUS.

To the general practitioner of medicine no subject is of more importance than that of the various disorders classed under the head of Indigestion or Dyspepsia. That they have always been the "*bete noire*" of the profession is shown by the infinite number of remedies that have been from time to time heralded as cures. The patients of this class are the ones who wander from one physician to another with their tale of woe, and tell each one in turn how they have been treated or mistreated by his predecessor.

Volumes have been written on the subject, and it has been the aim of hundreds of investigators to find what the causes are that underlie these troubles. There are no doubt a variety of causes, and in this as in everything else each cause produduces its own effect.

I wish to-day to call your attention for a short time to one cause that seems to me of great importance in producing certain classes of these disorders. It is also a cause that is very often overlooked or neglected. That the condition of the teeth should have a great deal to do with the subject of indigestion is apparent to all. Every physician has seen the old man or old woman without any teeth, or only a few "snags," complaining all the time of trouble with the digestive apparatus. They say their stomach hurts them, and that they have to "rift" wind for several hours after eating. They are uncomfortable and unhappy. They would answer "No," if asked the question—"Is life worth living?" But see that same old men or women after one of our friends, the dentist, has supplied him or her with a set of new teeth. They are entirely different persons, cheerful and happy, so far as a fairly good digestion can make one so.

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* Read before the Ohio State Dental Society, December, 1893.

But this trouble with the teeth is not confined to the old and toothless. It begins with the infant. Nature recognizes the fact that the stomach is not able by itself to digest any but the most easily assimilated food, so she furnishes the young child milk, and a milk that does not form a hard curd, but is more of a flocculent mass, and very easily taken up and digested. As the teeth begin to come the salivary glands also begin to develop and prepare their secretion to assist in the digestion of mixed foods that the child is now ready for. In a large per cent. of children the teeth are not perfect and decay begins soon after they are erupted. Whenever this happens, almost without exception, the child will develop some of the various symptoms that accompany digestive troubles in children. Until very recently the general practitioner of medicine has not attached much importance to the decay and loss of the deciduous teeth, and almost nothing has been done to encourage their preservation until such time as the permanent set is erupted.

The teeth stand at the entrance or gate of the body, and their chief duties are the mechanical part of digestion. If the teeth are imperfect or decayed the mastication of the food is imperfect. Instead of going to the stomach in fit condition to be acted on by the digestive ferments, it is more nearly in the condition of food of birds, that have no teeth but are supplied with a gizzard. Unfortunately in our make-up the gizzard was omitted, and the result is if the teeth are not in condition to do this work properly and well, we suffer the pangs of indigestion, with all the sympathetic disorders that follow in its train.

It is true that the evil effects of "bad teeth" are seen more in childhood and in old age than at any other time of life. I am satisfied that in children a number of diseases may be traced to the carious condition of the teeth. Suppuration of the middle ear is caused again and again by a carious tooth. Disease of the eye is also caused by the condition of the teeth. Various neuralgias and reflex nervous symptoms arise from the same cause. Last, but by no means least of all, come the digestive troubles brought on by the carious teeth.

Have these things been regarded sufficiently in the past? How many of you, until within the past few years, have been called upon to treat and preserve the "milk teeth?" Was it not, rather, is it not the fashion to let them go, as they will not pay for being treated, they will be replaced so soon by the permanent teeth? This false ecomomy has been responsible for a countless number of sickly, ill nurtured children, who, if they live to reach puberty, make the nervous, dyspeptic men and women that are met in every walk of life, and that are pointed out by our English cousins when they say "Americans are a race of dyspeptics."

The art and science of dentistry has reached such a high plane that any neglect of the children's teeth in the future will be little less than criminal. It is also to be hoped that the time has come when the physician will realize his obligation in this matter, and will have the children's teeth carefully examined and treated, at least once in six months. In regard to older patients it is hardly necessary to say anything. It is recognized, both by the patient and physician as necessary for æsthetic as well as for hygienic reasons, that the teeth should be kept in repair. There are, though, a large per cent. of people, who on account of their finances or some other reason, neglect the teeth and shun the dentist. It is among this class that we find the digestive troubles caused by faulty mastication and fermentation.

The troubles caused by faulty mastication are entirely mechanical, and have already been referred to. Those of fermentation are still to be explained. Let us call your attention for a moment to the pathology of caries. Prof. Miller of Berlin says: "It has long been known that the human mouth was the abode of numerous microscopic organisms; but only within the last five or ten years, since more exact methods of bacteriological investigation have come into use, we have been able to acquire much definite knowledge as to the morphology, physiology, etc., of these minute organisms. Recently the study of the bacteria of the human mouth has been zealously pursued by various investigators, and much has been accomplished toward bringing to light the causes of various affections of the mouth and associate parts.

"There is no part of the human organism which furnishes a universal culture medium for bacteria than the oral cavity, and the different variety of micro-organisms that find in it conditions favorable to their development, are correspondingly numerous. Of these the larger part are of a non-pathogenic character, existing upon the various organic substances in the oral secretions, and upon particles of food which have been allowed to remain between the teeth, but producing no particular deleterious effects upon the surrounding parts other than the decay of the teeth."

Miller then divides the oral bacteria into several classes, one of which is composed of a large number of bacteria that decomposes sugar forming lactic acid. It has been proved in the past few years that decay is caused by a decalcification of the tooth substance, followed by a solution of the decalcified basic substance. The decalcification is brought about by acids, chiefly lactic acid; and these acids are produced by the action of micro-organisms or carbohydrates. The solution of the decalcified tooth substance is accomplished by the peptonizing power of the same or other micro-organisms. So much for the pathology of caries.

What bearing has all this on our subject? Can these micro-organisms be carried to other parts of the body and there do harm? James Isral describes a number of cases of abscess on the neck, chronic pyæmia, etc., which owed their origin to these organisms. That they are also able to produce both chronic and acute disturbances of digestion there can be no doubt. By the continued swallowing of the bacteria lodged in the mouth we have one of the most frequent causes of fermentative dyspepsia. It is now known that most of the bacteria found in the mouth may pass through the stomach without losing their vitality and under certain circumstances may produce severe disturbances in the intestinal tract. So, now that the pathology of dental caries is better understood, the connection between the proper care of the teeth and some of the phenomena of indigestion are easily traced.

To us as practitioners of medicine and dentistry, and as practical men, all these things show only this: What an important field we have in the human mouth for investigation and study; and how much the general health depends on the proper care of the teeth.

CHARITY.*

BY W. S. CURTIS, WEST RANDOLPH, VT.

IT must be conceded that the united effort of the dental profession would be a power behind any movement. Therefore it is the purpose of this paper to introduce an idea, which, possibly not new to all, has never been agitated, to my knowledge, by any member of our profession. It is a well known and lamentable fact to most of us, who have been in practice for any length of time that a large number of children and young people, within the immediate vicinity of every dentist, need more or less of our services, who are too poor to obtain them. Therefore they must do without. Adopt the credit system, and they seldom pay, or the operator must contribute more or less of his otherwise valuable time for the relief of their necessities. Either of which is all wrong, and works more or less evil to both operator and patient. Unfortunately very few of us are financially able to contribute much time to charity patients, although many desire to do so, and, in an effort to satisfy that desire, do much more in that line than is for their own material good—and to the injury also, of all patients able to pay, in consuming both time and money that might otherwise be used to promote the progress and intellectual growth of the dentist, to the direct benefit of himself and his patients.

To the end that this evil may be remedied, by the introduction of some proper system, I would suggest, for the consideration of this society and the dental profession in general, that a Dental Benevolent Association be organized in every state that has a dental society, that it be clothed with proper powers, granted by the legislature of the various states in which such societies exist. That it shall seek to create a fund by asking the state for an annual appropriation, also by soliciting, through various channels, the contributions of all kindly disposed persons, and many others who, possessing more or less money, when called upon to part with their worldly possession by the stern edict of their Creator, would, no doubt, as they looked about for some place to deposit their gold, conclude to drop something for the benefit of the masticating organs of the rising generation. That such fund, when created, shall be used for the relief of charity patients in all locations of the state, where any member of the association is in practice, either by alotment pro rata, to the various towns to be drawn upon by the local dentist performing such services, or by a direct salary paid to various operators appointed by the society, who shall travel about and do such work, at the various offices where members are located.

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*Abstract of paper read at Vermont State Dental Society.

Most of us have extra chairs and equipments that we would gladly donate for such use. Of course the amount of work done must be governed by the size of fund, and that no imposition be practiced. Some local board of civil authority should determine through its chairman in council with the local members of the association, who such patients shall be and determine upon, and give a certificate of amount to be done and variety. The details of which could be adjusted when the society should determine what method they would adopt for the expenditure of the fund. I believe if this movement was started in the right spirit with the combined effort of the profession behind it, that it would continue to grow until it would lift a heavy burden from the profession in general, and confer a lasting benefit upon the rising generation, many of whom would in after years, as they assumed the duties of life, remember the benefit they received from the organization and attend to its growth and prosperity.

Among the so called necessaries of life, which are recognized as such by the public and for which some provision is now made, we owe everything. Take the history of our own lives. Think of the millions that have toiled, that we might become what we are, an educated, refined and scientific body. Think of what has been the labor of creating the civilization we unconsciously inherit.

Let us try to realize that our usefulness in this world will be measured by what we add to the inheritance we received, for the benefit of our successors. It is the universal sentiment of all civilized humanity that the necessaries of life be furnished for those who are unable to otherwise obtain them, and it goes without saying that such provision would generally be made if it did not cost anything to do so. It is also conceded by all that any expense which the community incurs, that is an actual benefit to the general public, is a wise and economical investment. We have only to examine by the light of history the various elements of disintegration now at work upon our social system, to realize that the kinship of men, a fundamental principle necessary to progress and happiness, has at last been discovered. That this fact will eventually result in a more equal distribution of our abundant wealth for the public good, no student of modern thought can deny. Shall we not, then, be prepared to absorb our share of it by organizing a benevolent association, and, by every honorable means, seek to create a fund and educate the community to realize the necessity of this movement, until at last we should receive the proper recognition and financial support necessary to carry on the work. If anything can be done to bring about this result, is it not desirable to do so? And if done, shall we not feel as we lay down our work and mingle with the silent majority, that this movement was one of many, now being agitated, that was destined to become an important factor in establishing the universal brotherhood of man.

ALL SORTS.

For Shock and Collapse.—Atropine is the quickest and most valuable remedy known in surgical shock and in those conditions in disease which resemble it. It may be given hypodermically, or by mouth in the form of a granule dissolved in hot water every ten minutes until the desired reaction occurs.

Wiber (D. E.) on Listerine in Dentistry.—I have used listerine for several years in my practice with excellent results. I invariably use it after surgical operations in the mouth as an antiseptic wash. In septic troubles it is my principal reliance, and I have yet to witness a failure when it has been used as directed.

Stone for Sharpening Excavators.—The sharpening of spoon excavators is always a little difficult to carry out nicely with a flat stone. Messrs. C. Ash & Sons, however, seem to have rendered the process a little easier by the introduction of an Arkansas stone with three half round grooves of different widths. The stone, before being used for the first time, should be soaked for at least a week in fine salad oil.—*Jour. Brit. Asso.*

Clark (E. G.) on Amalgam Fillings.—My experience is that fillings of amalgam that have been finished up, polished and burnished with as much care as those of gold, the results are far more complete and lasting. To sum it all up, we must remember to execute faithfully these six points: First, use the rubber dam; second, secure good access to the cavity; third, remove all defective tissue; fourth, form your cavity as nearly a concavity as possible; fifth, insert your filling by the wafering system; sixth, finish and burnish your filling at a second sitting. Then, I say, you will have amalgam work that you will be proud of and that your patients will appreciate.—*Extract Pacific Journal.*

Silver and Aluminum.—The utilization of the well-known property of aluminum to lower the fusing point of iron is a very neat and clever application of a curious phenomenon.

Silver is the metal which seems most useful in improving aluminum. Five per cent. silver gives to aluminum elasticity, which is wanting in the pure metal, increases its hardness, and is capable of being polished, and does not injure its malleability, or much increase the weight. This alloy is excellent for handpieces and handles of instruments. It is about as hard as coin silver, and is not affected by sulphuretted hydrogen; hence it does not easily tarnish.—*Extract Brit. Jour.*

Harlan (A. W.) on The Treatment of Acute Pericementitis.—For acute pericementitis I have used a hot pack on the neck and side of the face with three or four thicknesses of heavy toweling wrung out of hot water. At the same time I give calcium sulphide, one-tenth grain every ten minutes for the first hour, every fifteen for the second hour, and one every half hour for two or three hours longer. To arrest pain at night use

℞	Acetenilid	gr. viii.
	Syr. simple	ʒ ij.
	Spir. frumenti	℥ ij.

M. Sig. Take one-half the above at five or six P.M., and the remainder at ten P.M. —*Extract Review.*

Local Anesthetic For Painless Extraction of Teeth.—Dr. J. Alberto del Solar, Santiago, Chile, has furnished us for publication the following formula for his local anesthetic to be used in his painless extraction of teeth:

℞	Alcohol, 98 per cent. . .	f ℥ ij;
	Chloroform, ...	f ℥ iv;
	Ether, sulf., . . .	f ℥ iss;
	Camphor, ...	℥ j. M.

The solution thus made is to be applied to the gum for one minute, both buccally and lingually. It is not intended for hypodermic use, and to secure the best result the gum should be carefully dried before making the application. Dr. Solar states that he has successfully used the preparation in his practice for more than a year.—*Extract Cosmos.*

Hewitt (A. C.) on Local Anesthesia.—Painless extraction of teeth and oral surgery by local anesthesia is possible and practicable by hypodermic injection of cocaine. The following formula gives a hypodermic mixture, safe and effective, from the use of which, so far, no injurious or untoward results have supervened. Painless amputation of the finger, painless excision of a portion of a rib, and numerous other operations of minor surgery, unattended by pain, attest its value:

COMPOUND STROPHANTHIM HYPODERMICA.

℞	Sulp. atropin . . .	gr. 1-2
	Stropanthin . .	gr. 1-5
	Acid carbolic (95 per cent)	grs. 5
	Hydro. chlor. cocaine .	grs. 20
	Aq. dist. qs. . .	fl. oz. 1
	M	

Sig. Four to six drops, hypodermically, for local anesthesia.
—*Extract Review.*

A Caution in Local Applications.—It should be well known that no local applications of mercury in any form—calomel, ointments, powders or washes containing any of the salts of mercury—should be made to any diseased surface of skin or mucous membrane of a patient who is taking iodine in any form or any of its salts internally. The iodine appears in the natural secretions found on the membranes—tears, saliva, mucus—and in the pathological secretions of sores, ulcers and inflamed surfaces. Coming thus into contact with the mercury, the very irritant and even caustic iodide of mercury is formed. Many a doctor has been puzzled as to why the eye or the ulcer became so much worse when he only applied the usually mild calomel. Patients should be questioned before any local mercurial application, or even its administration by the stomach, as to what they may have been taking unknown to the physician.—*Med. World.*

Latimer (J. S.) on Clasping.—Whether with gold work or vulcanite, it often happens that from the dragging of the impression the cast has been misleading, and when the adjustment of the completed plate comes to be made the clasp is found to stand away from the tooth too far for the comfort of either dentist or patient. To overcome this difficulty, or rather to prevent it, I have devised this plan: Cutting a clasp from a rather thin piece of clasp stuff, and having it run lengthwise of the fiber of the gold as made in rolling, and regularly tapered from the broader end to the narrower, I bend about half an inch of the smaller end (for a molar, less for a smaller tooth) back upon itself, annealing two or three times, while doing so, to avoid fracture. This doubled part is then bent to fit the tooth to be clasped; the tip portion being on the concave side, and therefore next the tooth. It will be readily seen that this method increases the opportunity for adjustment, and allows greater movement of the spring in case of leaning teeth.—*Cosmos.*

Peirce (C. N.) on An Obtundent for Sensitive Dentine.—As a satisfactory "obtundent" for sensitive dentine is very desirable, I send you herein a formula which has responded more frequently in desired results than any other combination I have used, not excepting my experiments with the secret nostrums sold for the purpose. While this in preparation costs less than one-fourth of those, I have the satisfaction of knowing the constituents, and would advise those who desire an obtundent for this purpose to try this combination before purchasing any secret product.

℞ Cocain, gr. v;
Carbolic acid, grs. xx;
Chloroform ʒ ss;
Muriatic acid, m x;
Alcohol, ʒ ii.

—*International.*

Cheap and Effective Accumulator.—A very simple and yet efficient storage cell can be made by carrying out the following suggestion given in the *English Mechanic:*—"Procure a glass bottle, cut a strip of $\frac{1}{16}$ sheet lead, to fit nicely around the inside; score this all over on the inside. Now cut two pieces from the same gauge lead, almost square, one having a central slit half-way down from above, and the other half-way up from below. Score these also on both sides. Put them together, fastening them with a drop of solder, and also attach leaden lug. A similar leaden lug must be attached to the inner coating of the bottle. Now coat the scored lead with red lead and oil of vitrol paste; allow to dry in a warm place. When quite dry the cell can be filled with a mixture of water 4 parts, oil of vitrol 1 part by weight. If carefully put together, this cell is ready to receive a charge at once.—*Jour. Brit. Asso.*

Ottolengui (R.) on Some Suggestions in Implantation.—In the first twenty-four hours after an implantation success or failure is determined. You want to avoid infection during the operation by the free use of bichloride of mercury; but would not infection after the operation be just as bad? and are we not told that the mouth is full of bacteria all the time? Would it not be a nice thing to seal up or secure the margin of the gum to the tooth? Immediately before dismissing the patient, after implanting the tooth, I cover the tooth and gum thoroughly with tannin and glycerin, leaving the mouth open for five minutes until a distinct coagulum is formed. In some cases I have known that coagulum to be attached to the tooth five or six or eight days afterwards. When the patient comes back it looks like a slough, but it is the coagulated blood, and it stands there as a guard to the entrance to that cavity, and practically seals it up. Just as soon as you see pus you may know it is a failure.—*Extract International.*

Can Protrusion of Lower Jaw be Prevented in Old Age.—How far does the rectangular relationship of the ascending ramus to the body of the mandible depend upon the maintenance of the molar teeth? Is it possible by supplying artificial substitutes to prevent what is usually regarded as the normal obtuse angle in a senile condition? It is well recognized that a similar obtuse angle in childhood generally becomes a right angle as the molar teeth successively demand room on eruption, and it would be interesting to have recorded the collective experience of practitioners who have endeavored by artificial means, to prevent a return to the original shape. The only speaker who alluded to this point in the discussion at the Manchester Society expressed the opinion that it could not be done. If this be correct we must be driven to assume that there must be an inherent tendency in the life history of the jaws to approach each other at that period when there is no longer the necessity to continue the building up of new tissues, when even repair commences to fail, and nutritional processes, generally, give evidence of having completed their allotted span of function.—*Extract Ed. Brit. Jour.*

Harlan (A. W.) on Immediate Root Filling.—The question of immediate root filling is one that is interesting to the dentist because so much disaster has followed the indiscriminate practice of it. One of the first patients I saw to-day was a gentleman who had a bridge with five teeth on it, and there was an alveolar abscess from the distal buccal root of the first molar, and I told the gentleman it would be impossible to cure that abscess without taking off the bridge. He said he had been assured by a dentist that by injecting something into the fistula from the outside it would get well. Another thing that attracted my attention in that gentleman's mouth was this: The third molar below had a gold crown, and there was an open fistula, and the first molar on the other side of the mouth below had another open fistula. So here was a man, forty-three years of age, with three abscesses discharging into his mouth daily from three teeth that had been crowned. That case alone ought to be something of a warning to dentists to properly fill the roots of teeth. Whether these teeth were filled by the immediate process, or slow process, I do not know, but I think there is no one in this room who will question the wisdom and suggestion that I had made, that these abscesses would never heal spontaneously; that all of the crowns and bridges would have to be taken off and the roots filled.—*Extract Review.*

Robbins (C.) on A Combined Mirror and Drip Point.—It had occurred to him that if one could use the drip point secured to the back of the mirror, it would occasionally be useful. He therefore arranged a small contrivance that would fit the back of any glass of a certain diameter, with a small india-rubber connecting tube, and a ball filled with water, to be held in the left hand, for the purpose of throwing light, and at the same time water, to any tooth in either jaw. The difficulty at first was in working on the right side of the mouth; but, after eight months' practice, he found that by always working from the left, whether it was used on the left or right side of the jaw, any part of the mouth could be reached. A second and simpler form of the instrument dispensed with the loose arrangement, which made it a sort of universal thing. As a matter of practice, he found that it was better to stick to one glass, and there was nothing gained by changing it from one to another. The arrangement was simply a little bit of metal tube soldered obliquely to the back of the mirror, and could be carried out in one's own workshop. Notwithstanding the fact that one was rather apt to look on one's own child with favor, he still thought that the apparatus would be found useful to those who might adopt it.—*Brit. Jour.*

Wood (James) on Treatment of Neuralgia.—In all forms of neuralgia, the hypodermic injection of morphia in $\frac{1}{3}$ or $\frac{1}{2}$ grain doses in the course of the nerve, often produces wonderful effects, or $\frac{1}{2}$ grain to a grain of cocaine may be injected locally.

Chloroform, Belladonna, Menthol, and Opium, locally applied, are also valuable. The general condition of the patient should always be attended to, and the treatment directed to its improvement.

Good food, fresh air, tonics, such as cod liver oil, or other fat, iron, quinine, in large doses for adults, (from 5 to 8 grains), nux vomica, are always necessary. Among the remedies which are especially directed against the local disease are:—arsenic in full doses (5, 7 or 10 minims of the liquor). or small doses gradually increased: amm. chlor. in doses of 15, 20 or 25 grains, 2 times a day. Some writers prefer small doses (5 to 10 grains) repeated every half hour of amm. chlor., as large doses at long intervals do no good, and only make the patient sick. Potassium bromide in full doses, butyl-chloral-hydrate in 5 to 10 grain doses; tincture of aconite in 2 to 5 drop doses and sulphate of quinine are also very popular remedies. Canabis indica, ether, valerain, turpentine, and nitro-glycerine, are sometimes useful; and a small dose of brandy or wine will often give much relief. Counter-irritation may be applied by mustard or blisters. Electricity is sometimes of benefit.—*Extract Brit. Jour.*

Goldsmith (L. C.) on Removable Bridges constructed of Rubber.—Some gentlemen have spoken of the advantages of making the removable parts of the bridges of rubber. As I have seen these cases, and have had something to do with them, I would say that in the cases which are here illustrated the teeth are held with rubber. The manner of making is as follows: After the teeth have been ground and fitted, they are held to the opposing side of the articulator with a little hard wax. A mixture of marble-dust and plaster is then poured around them, which, after setting, is contoured to the shape which you see here. Then dies are made for each side, and pieces of gold or platinum swaged to completely cover the wax. These, after being soldered to the framework, form a box which is filled with rubber, into which the teeth are pressed and then vulcanized. It is necessary at this stage to cut a hole on the lingual side of the boxing to allow for the expansion of the rubber in vulcanizing, or else it may bulge the gold in places least desired. In order to make room for the rubber when expanded, a small cone-shaped piece of wax is fastened to the boxing over the aperture previously cut. The heat in vulcanizing causes this to be absorbed into the plaster, and in consequence leaves a space the size of the wax used.—*Cosmos.*

Darby (E. T.) on Cohesive Tin.—Tin may be worked in various forms. When the cohesive properties are to be relied upon, there is perhaps no better method than rolling the foil into a loose rope, and cutting into pieces of various lengths. In cavities surrounded by strong walls, the tin may be folded into tape or made into cylinders, and time will be saved by introducing it into the cavity. Shavings of tin turned from a revolving ingot of the metal in the lathe work with a softness which makes it a pleasure to use it.

I have only a word to say about tin shavings, and the tin wheel from which they are turned.

An ordinary corundum wheel, one-half inch thick and two inches in diameter, is used as a model, and is molded in sand. The tin is melted in a ladle and poured into the sand, after which a hole is drilled in the center of it, so that it can be mounted on an arbor and turned in the lathe. A chisel on the side rest is used as the tool, and these shavings are turned off the thickness desired.

Pure tin freshly cut from the wheel in the form of shavings is quite cohesive, and as you have seen, packs beautifully.

When tin and gold are combined in the same filling, I think there should be at least two leaves of gold to one of tin. My habit is to put one leaf of No. 4 tin between two leaves of No. 5 soft gold foil, then fold it and cut into narrow pieces.

I am not particular what kind of an instrument I use to pack the tin with. An ordinary excavator with the point dulled or broken is as good as anything. The tin is so cohesive that it works as well as cohesive gold foil.—*Extract Cosmos.*

Newkirk (G.) on Special Precaution Against the Making of Wounds while Operating upon the Teeth.—First. Almost always the rubber dam should be applied before operations are begun. There are exceptions, where the difficulty of its application and the pressure of clamps upon the gum more than balance the benefits to be derived from its use, when it should be discarded.

Second. It is essential that the head of the patient be steadily supported. He will be less likely to move his head, voluntarily or involuntarily, if his position be made fairly easy and comfortable.

Third. The position and height of the chair should be adjusted to the easiest and freest movement on the part of the operator. The "arm rest" is a necessary adjunct to the chair, in order that one forearm and the hand may be firmly supported while steadying the head or lower jaw of the patient. With these precautions the possibility of a "slip" is greatly reduced.

Fourth. For the engine, a poor hand piece, one which fails to grasp and hold the bit firmly, should not be tolerated.

Fifth. All cutting instruments should be sharp—they can be used more accurately, delicately and speedily.

Sixth. The operator, while he may work rapidly, should never be in haste; but rather deliberate, make sure especially that each instrument he selects is adapted to the work in hand. Of all things he should avoid the jerkiness or fussiness in the handling of tools.—*Extract Review.*

Our Sailors' Teeth.—The announcement is reported that no man is now eligible for admission to the Royal Marines who has defective teeth. The rule to which allusion is made is not altogether a new one, and is as follows; "Persons of whatever age or class are to be considered unfit for service into Her Majesty's service if they have seven teeth deficient or defective (unless official authority is obtained from the Admiralty), or if the biting or grinding capacity be seriously impaired owing to a smaller number of absent or unsound teeth, for instance three or four of the incisors or four molars in the same jaw." "The examining officer is also directed to take into account the condition of the teeth generally and the probability of their lasting." The Admiralty some eight years ago made an arrangement with the Dental Hospital of London providing that for a small annual payment the teeth of all recruits should be put in good repair. It is time that all recruiting stations and headquarters of regiments should have a dentist to take care of the teeth not only of recruits, but of soldiers who are quite unable to pay a fee. Inasmuch as they are the servants of the nation, the government should provide soldiers and sailors with properly-qualified dental surgeons to pay periodical visits at barracks, or dentists be appointed in all towns where depots are found to receive the men at the dentist's residence. The navy has moved in the right direction by not only formulating the above rules, but also requiring of naval surgeons some knowledge of dental surgery, and instructing them at Haslar on this subject. This can only be tentative, and nothing short of the appointment of dental surgeons at the various depots, training ships, and barracks can be really satisfactory.—*British Medical Journal.*

Teague (B. H.) on A Case.—Mrs. —— married very young. Having children rapidly, her strength became impaired. After the birth of the last child she suffered from the exposed nerve of a tooth and death of a nerve under filling of another. Living some distance from a dentist it was not convenient to have immediate attention. When she did visit the local dentist he applied something to the former tooth which failed to devitalize the nerve completely, and extracted the latter, without any attempt at treatment (?) The patient, much worried and disgusted, applied to a practitioner of a city in Georgia. He applied cocaine to the semi-devitalized tooth with the hope of being able to take out or drive out the living portion of the nerve. Telling her of his application and intention, she asserted that he did wrong, as she "had an idiosyncracy against any anæsthetic," and immediately went into a violent hysterical turn, from which she was with difficulty restored.

Soon after this she visited me. I found the ends of the nerve alive, in the tooth complained of. An examination with a nerve broach gave but slight pain, and my hands had been at the patient's mouth only the few moments necessary to make it when she accused me of applying cocaine. I tried to assure her that I had not medicated her, but it was of no avail. She said, "Well, the same feelings are coming over me as when Dr. —— gave me cocaine." She then went into an hysterical condition, though it was not as severe as in the first instance, as I learned afterwards.

The conclusion is, that had the local dentist succeeded in devitalizing the nerve in the first tooth, and had treated the second tooth to a healthy condition, so that the patient could have masticated with comfort, she would not have been so sadly run down; and, again, the case proves that shock or imagination produces the symptoms many times attributed to an anæsthetic.—*Southern Journal.*

Steele (W. H.) on a Plate Retainer.—The following plan has been in use in my practice for several years, and has proved a perfect success in overcoming those difficult cases, where we have a *soft alveolar* *ridge* in connection with a very firm, hard palate. Take the impression with Teague's compound, and make cast as usual; after the cast is hard enough for the base plate, examine the mouth carefully and locate the margins of the hard palate. Cut a pattern from heavy paper, the proper size and shape to cover this part of the mouth; now place this pattern on a piece of tin of the proper thickness, and cut out a fac simile of the paper; fit this on the plaster cast *exactly* in the same position that the pattern was fitted to in the mouth; press t firmly to place, and fasten with cement, or a couple of pins. Now make the base plate, and mount in the articulator as usual; in grinding up be careful to get a *perfect* articulation; invest as usual, remove the wax and pack with best maroon or black rubber until there is just enough for the plate. Then cut a piece of the cloth, which comes with the rubber, large enough to fully cover the cast, and lay over it in order that the flask may be easily opened; bring the flask *entirely* together. Open and remove the cloth and the tin pattern from the cast. Fold sheets of black soft *palate* rubber, until it is one half thicker than the tin; lay the pattern on this and cut the rubber same shape and size. Place this piece of rubber in the depression made in the rubber by the tin pattern. Close and vulcanize as usual. When the plate is all finished, pit the surface all over with a number seven round bur, while doing this, the rubber and bur must be kept wet. The soft rubber should follow the hard ridge entirely back to the heel of plate. The thickness of the soft rubber should be governed by the variation in difference between the hard and soft tissues, and often the tin pattern should be thinned with a file in some parts before fastening to cast, in order to make the soft rubber thickest in the hardest part of the arch.—*Dental Register*.

Farrar (W. J.) on Physiological and Pathological Changes in the Alveolar Tissues, from Operations for Correction of Irregularities of the Teeth.—*Theory.*—Teeth are moved through absorption of the socket-tissue, or by bending of the alveolar ridge, or both. This absorption or this bending may take place by the tissue-alterations being carried on within their physiological functions, or they may take place outside of these healthy functions and in the pathological. If the tissue changes can be conducted within the physiological functions the operation of moving a tooth will be painless. But if the changes are pushed beyond this condition, and into the pathological, the operation will be more or less painful.

Any regulating mechanisms that can be controlled so as to confine the tissue-changes within the healthy line are therefore superior to those that cannot be so controlled. Mechanisms that operate by elastic rubber, or by metallic springs, if the power be not so great as to force the changes to exceed healthy action, will be comparatively painless, but to so control elastic materials that they will not cause pain is difficult, and generally impossible.

This is not the case when mechanisms operated by screws can be used, because by the screw exactness of action can be secured, and (exactly) the proper degree of force can be given. Especially is this true when the management of the mechanism is left to the patient, who knows better than the operator when the greatest degree of force can be given without causing pain.

When these facts are clearly understood and are carried out by a skillful operator, the prejudices of patients against regulating operations will be overcome, and reputation for high skill will begin. The desideration is assured by the screw making it possible to take advantage of the "Law of Labor and rest," which applies to these tissue actions as well as to other tissue energies.—*International.*

Are Our Dental Organizations Satisfactory ?—Prof. Truman has the courage of his convictions. His editorial in the February number of the *International* is squaring fully up to the demands of the age. "Are our dental organizations satisfactory?" We trow not. There is cause for an active consideration of this whole question. Our fault is not only over legislation but unwise legislation. "Representation from the local to the national should be based solely upon the original work. Mere membership should have no weight in selection." We ask, how will the fault be remedied if left to the local body which is so commonly saturated with selfish and ambitious politics? Men who are seeking for position and have not a particle of claim for intelligent consideration are going to keep in with the voters who will place them in the positions they are clamoring for.

The best expression of valuable scientific contributions cannot thrive in any body that has part or lot in the present state of dental politics. We repeat what we have before said. The only proper body of persons to encourage real scientific work is one that has nothing else on hand. Let the membership be increased only on the merit of the contribution ; and this decided by scientific men who have no political ambition. Prof. Truman's courageous editorial should call out the best thought of all editors and practitioners. We are not in favor of the societies drawing the line on the degreed practitioners so long as the state organizations persist in conferring degrees in the face of dental schools, and having one law in one state that conflicts with one in another state, and even conflicts with our national rights. Those in charge of our schools do not show much pluck in submitting to it. Why do not they show the courage of their convictions along this line? It does not require much wisdom to answer this question. The retroactive phase in dental law is a reproach to good sense, to say nothing of justice. Every man of common sense knows it is unconstitutional. Then why compel practitioners to suffer annoyance in going from one state to another, if circumstances compel them. We mean those who were in practice before this legislation. We said to a Connecticut Yankee dentist lately, " well, your state has got a law." " Yes," he replied, " we have got hair on our backs:" We asked, " does it bristle any?" " Certainly." These hairy men are not highly bred. Plenty of them are to be seen in the dime museums.—***N.** Y. Cor. Dental Review.*

Abuse of Bridge Work.—The reckless and indiscriminate use of bridges for the purpose of replacing lost teeth is producing a vast amount of harm, and fast creating in the minds of the people a prejudice against this class of operations.

The bridge, when constructed upon absolutely scientific principles, and having as piers, good sound teeth or roots, firmly set in the jaws, offers the very best method for supplying lost teeth. When thus constructed and properly applied, there is stability, utility and cleanliness combined in the highest degree. When the contrary is the case there is lack of stability, little or no permanent utility, uncleanliness in a great degree and very frequently loss of the pier teeth.

To construct a bridge combining all the best quatities and to properly set it in the mouth requires a high grade of judgment, skill and knowledge of scientific principles. Proper foundation is the first essential in the construction of bridges; and this means as a rule a solid pier at each end of the structure, fully covered by a cap or crown. We have seen in a few instances, when the articulation was favorable, a lateral and a central successfully carried by a central root, but as a rule it is safe to conclude that two piers are essential for all spans.

We have seen two molars and one bicuspid attached to a cuspid and bicuspid root, the distal end of the span resting upon the gum. It is difficult to understand how any one possessed of ordinary scientific knowledge could persuade himself that such a structure could reasonably be expected to long remain useful for masticatory purposes. A small gold clasp properly applied would last much longer, be equally serviceable and less liable to destroy the teeth to which it might be attached.

If the crowns for the pier teeth are not nicely adapted to the cervical portions of the roots, there is much probability of injuring the gingival margins of the gum and peridental membrane. In many instances we have seen the usefulness of a pier tooth totally destroyed by a badly fitted crown. A poorly fitting crown applied to a tooth for its restoration only, will be much less likely to cause irritation of the gum and peridental membrane than the same crown if it carried in addition one half of a bridge of three or four other teeth, as the increased force exerted in mastication subjects it to greater danger of injury.

Observation leads us to the conclusion that open bands for the support of bridges, that is bands without occlusal surfaces, do not long remain useful; as the gold cannot as a rule be so perfectly cemented to the teeth as to prevent, if there be heavy mastication, a loosening and slipping gumward of the whole structure: with the consequent evil results. While there are exceptions to all rules, still it may be asserted without fear of contradiction by any one of a considerable experience in the manufacture of bridges, that the only safe method for the application of this form of denture indicates, as before said, two solid pier teeth, one at or near each end of the structure, fully covered by well shaped crowns accurately fitted to the necks of the teeth.—T. L. G. in *Dental Review*.

Haskell (L. P.) on The Cracking of Teeth in Soldering.—In the last number of the *Review*, in an article on "Setting Bridges," the remark is made by Dr. McCandless that those who say they do not crack teeth in soldering "do not know whether the teeth are cracked or not," that "they are often cracked and do not show." I have been soldering teeth for nearly fifty years; think I "know a good thing when I see it," and especially whether a tooth is cracked or not. A crack can *always* be seen when it is *dry*, but often while the moisture is in, it does not appear.

He asserts that it is impossible to solder teeth in crown and bridge work without cracking more or less teeth. I reply that there is no need of teeth cracking in soldering, and furthermore that no especial care is needed to prevent it.

Many of the students at our school, coming from the dental colleges, tell me that there they have much trouble from this cause and wish to know how to prevent it. They, however, go on with their work soldering partial sets of gum teeth, crowns and bridges; some of them having no cracks and others but few, and this too in the early use of the blowpipe.

In my own experience, and taking no pains to avoid it, I do not remember the time when I ever had a tooth crack.

Perhaps a few suggestions may not be amiss. If dentists would consider that "cross" pin teeth are more apt to crack than the perpendicular or "straight" pin teeth, they would use fewer of them. They are not only more liable to crack in soldering, but are not as strong for wear. This fact is so apparent it has been a great wonder to me that at the dental depots, when inquiring for "straight" pins and wondering why there were so few, I am told that "the dentists all ask for the 'cross pins.'" Use less of them gentlemen, and you will have fewer cracks in soldering and less breakage in wear.

Do not rivet your pins, as the solder flows only upon the head of the pin ; splint the pin, and if the hole is larger than the pin, so much the better, for the solder flows down inside and holds the stronger.

Never heat up the case until the borax and solder have been applied. Heat up over the large burner, slowly at first, and then turning on the full head ; take about one-half hour. The heat should (in case of a plate) be thrown by the blowpipe upon the plate first, so that it may be as hot as the backings, as they will heat up as a matter of course from their exposed position. Then throw the heat directly upon the solder. If necessary to apply more solder do so, but not more borax, as there is danger of thus cracking the teeth.

Many dentists experience much difficulty in soldering by using the miserable little jewelers' blowpipes, which are not at all suitable for dentists' use, there not being a sufficient volume of flame, and the mouth aperture being so small that it has to be taken inside the lips, thereby causing the muscles to become tired. To remedy this I induced the dental goods manufacturers to make a larger blowpipe—the mouth-piece to be pressed against the lips—which makes soldering much easier.

Another difficulty is found in not having a suitable soldering burner. Formerly I wound fine binding wire over the end of the gas pipe so as to break the force of the gas jet. But I am now using a burner made for the purpose, which some have called the "Haskell burner." Many use the automatic blowpipe, but I have found that beginners succeed better with the mouth blowpipe, and for my own use far prefer it.—*Review.*

Dennis (G. J.) on Marginal Lines of Fillings.—For prevention of decay, it is almost axiomatic that the marginal lines of these small cavities should be extended, not only beyond the contact points, but beyond the points of first decay, which Dr. Black states, lie just rootwise of the contact points.

If a slight digression may be permitted, not only should the marginal lines of these fillings be extended so that every part shall be exposed to the cleansing action of brush or pick, but the contour of these fillings, small as they are, should be exaggerated, so that placed in approximating teeth, they shall only touch at the most central points of their surfaces. This may be done without marring the appearance, for the rays of light which fall on such fillings, may be so regulated that the real projection of the filling beyond the natural tooth contour will not be apparent. This principle was first suggested by Dr. Edmund Noyes, in connection with large contour fillings, in which a real diminution of the size of the fillings, could be made without affecting their apparent size.

The next class of cavities in these surfaces are those in which decay has progressed until both the contact points and points of first decay have been passed, without involvement of either the labial or lingual plates of enamel, although the dentine next the lingual plate is exceedingly thin. In these cavities again extension of the margins is necessary until the lingual as well as the labial plates of enamel are entirely protected by the gold from contact with the approximating teeth. These lingual margins are so often permitted to lie in contact with the adjoining teeth that especial attention should be called to them, for probably a greater percentage of failures may be found along these margins in this class of cavities than in the margins of the larger cavities. It is a great temptation to utilize the lingual plates in these cavities as walls for the fillings without cutting away the edges until they are strong and solid and the margins are clear of the approximating teeth. Too often the disk is passed between the teeth when these cavities present themselves and the margins prepared so that all except possibly the labial margins are in contact with the teeth which approximate them.

The next class of cavities are those in which decay has continued until the lingual walls have been broken down to a considerable extent while the labial remain comparatively firm. In this class the marginal lines should be extended until enamel walls are obtained, fully supported by dentine, and until the entire marginal line of the cavity is clear of the next tooth. These lingual margins should be also extended with regard to the lingual fossæ found in the central and lateral incisors, and when any tendency toward sulci is noted, they should be extended to include them.

Next, have been classed together those cavities in which the labial as well as the lingual enamels have been broken away, with only the mesio-morsal or disto-morsal angles remaining, although sufficiently supported by dentine to preclude the necessity of cutting off these angles. The margins in these cases should be trimmed in much the same manner as with the previous class, having regard for the strength of enamel at the mesio- and disto-morsal angles, with sufficient bevel at these points to preclude the feather edge of gold which is apt to draw away from the margin. Here again in the filling, the contact points should be restored in gold for the preservation of tooth structure at the margins.

To the next class belong those in which decay has caused the complete breaking down of the mesio-morsal or disto-morsal angles. They should be formed entirely with regard to the strength of the enamel and its lines of cleavage. As with the other classes, the margins must be extended until all the lines are away from contact with the opposing teeth.

Here, the lines may be so formed that a shoulder results near the cervical margin which greatly assists in retaining the filling in place.—*Extract Review.*

The Laboratory.—Why do so many dentists consider prosthetic post-graduate schools like Dr. Haskell's a necessity? What is the matter with education in the purely mechanical branches of our profession, that so many men graduate from our colleges, unfitted to master the ordinary, much less the extraordinary difficulties of the laboratory?

Many young men enter upon the study of dentistry with the idea of being expert operators, and leave with the idea that if they attain the feeblest skill at the chair, they need not be mechanics. In college life it was extremely difficult in the past, and it continues so in a lesser degree, to enforce concentration upon the work of the laboratory, and young men were busily engaged at the chair before they could properly construct, from start to finish, an ordinary set of vulcanite. It is much the same as if the medical student began his first year with obstetrics and pathology, without having learned the first principles of anatomy and physiology. It is not uncommon to find students, in their first six months, dabbling in operative work, when they do not know how to make an articulation, or to polish an ordinary set of teeth. They have no pride in the property in the laboratory; their tools are dirty and kept in disorder; the lathes are covered with the debris of a week's polishing material, and yet they are happy. We have watched the career of some of these boys. If they have turned out clean, and careful for themselves, it simply proved that they were dirty and dishonest as students; but as a rule the habits they displayed in the laboratory when learning, followed them through life. Vulcanite has been in many ways a curse to the profession, and we may add to the list this fact, that it has been the means of developing a generation of careless and dirty students, who are a reproach and obstruction to the higher ideal of dental practice. In the olden time of gold and continuous gum work, the laboratory was at least as clean as a jeweller's bench. There are model laboratories to-day where vulcanite predominates, but they are few and far between in comparison to the period when vulcanite was unknown. How do we explain this fact? Chiefly because students start out with a low standard of opinion as to the skill required to construct vulcanite, and they are as impatient to run as they are indisposed to creep. The result is that when these boys become practitioners they find themselves handicapped; they meet difficulties they cannot overcome, and they have to begin to learn. It is in every way wiser ond more fitting to get, in the beginning of student life, the ground-work of mechanism in all its branches, theoretical and practical; a knowledge of the use and care of tools and apparatus, and to have a clinical experience of prosthetic dentistry before a thought is given to the work of dental operating and pathology. It would not only be better for the student, but certainly for the dentist in whose office the student may be getting his early tuition.

Even if the dentist intends to delegate the mechanical department to an associate or an assistant, he cannot afford to be indifferent, much less ignorant. We cannot put our patients where we put our models and our dies. The patient who consults a dentist expects his personal advice, and in most cases his personal attention. One may go to a barber and take his choice of half a dozen workmen, but as a rule, the dentist of many chairs and many operative assistants is a quack, or has a quack's instincts, and is keener to make his practice purely mercantile than professional. If dentistry is to descend to that sort of practice, it will degenerate ethically until it is relegated to the rank of a trade. It is foolish for a dentist who desires to do the best for his patients to place himself at the mercy of mechanical assistants, who may leave him in the lurch on short notice. Personal skill in mechanical dentistry is necessary, even to one who has to direct assistants. It seems to us that, all things being equal, a student who is occupied twelve months of his first year in the laboratory, should get a better training than where his career begins in a college, in utter ignorance of all the minutiæ of the laboratory.—*Editorial Dominion Journal.*

Johnson (C. N.) on The Treatment of Pericementitis.—In those cases where the canals have been opened up and a free vent made for the escape of gases, and this has failed to bring relief, it is an indication that the tissues of the peridental membrane have become so far implicated that the inflammatory process will go on independent of further irritation. This has always proved in my hands the most difficult stage of the affection to control, till within the past two or three years. During that time I have followed a practice which if faithfully carried out has seldom or never failed to give satisfactory results. The treatment consists in the application of moist heat to the gums surrounding the affected tooth.

The method of procedure is as follows: Water as hot as the tissues will tolerate, is taken up in a large bulb syringe having a large point. A jet of hot water is directed upon the gums and into the cavity of the tooth, all cotton or other dressings having previously been removed from the canals. The tooth and surrounding tissues are thus submerged in water as hot as the patient can tolerate. During the refilling of the syringe the water is to be retained in the mouth and then emptied into the spittoon just previous to another application. The water should be kept on a gas stove near at hand and the heat gradually raised as the tissues will admit. It will be found that in the end water extremely hot may be used if the heat be gradually increased, and one of the essentials to success in this treatment is to employ an exceedingly high degree of heat. If the tongue or other tissues of the mouth remote from the region of the tooth are too much affected by the water, a saliva ejector may be used to carry off the water after it has flown over the gum in the immediate vicinity of the inflammation. The gum in this region will often tolerate a much higher temperature than the normal tissues. In fact an application so as to be extremely painful to normal tissue often proves instantly soothing to the affected parts. The process should be kept up until perfect relief has been obtained, and the length of time necessary for this varies in different cases. In some instances where pain is most distressing prior to the application the sense of relief will appear so suddenly as to prove astonishing, while in others it will require persistent treatment for perhaps thirty or even forty minutes before a substantial effect is produced. I have never yet encountered a case where persistent effort failed to finally bring a cessation of pain. As to the permanency of relief, this is governed largely by conditions and circumstances.

If the general tone of the system is bad; if there is universal congestion strongly marked by the symptoms of what is commonly called "a heavy cold;" if the circulatory and absorbent systems are badly out of condition; or if the excretory organs fail to perform their function, then the relief is necessarily temporary, and we must resort to constitutional treatment in order to get permanent results.

A patient in this condition should be given a rapidly acting cathartic, the citrate of magnesia in large doses having proved in my experience the most pleasant and satisfactory. Again, if the inflammation has gone on to a point where suppuration has begun in the apical space, we cannot hope for complete relief till the abscess has pointed and discharged, but even in these cases we may be reasonably sure of preventing extensive infiltration and puffing of the superficial tissues, and also of mitigating the suffering.

As to the circumstances which may render the relief temporary, I have noticed that if the patient left the office immediately after the hot water application, and went into the open air on a cold day without carefully protecting the whole side of the face from the air, the pain would ordinarily recur. In other words, exposure would bring back the trouble. But not the least among the gratifying results that have followed this line of practice in my hands is the large per cent of cases where a permanent relief has been gained. In some cases where the pain has been excruciating, I have added to the hot water a few drops of carbolic acid, making about a five per cent. solution. The anesthetic effect of carbolic acid is thus added to that of the hot water, and the relief is usually prompt and exceedingly gratifying to the patient.—*Extract Review.*

NEW PUBLICATIONS.

Catching's Compendium of Practical Dentistry for 1893. Published by the author, B. H. Catching, Atlanta, Ga. Price, $2.50.

Each year of its publication has marked an improvement in this valuable work and it is now assuming a cosmopolitan appearance. Translators are being secured so that practical matter from all dental journals published will be given. In this issue the work has been begun; Dr. W. D. Miller, Berlin, translating from the German, A. C. Hugenschmidt, Paris, from the French, Wm. Dunn, Florence, from the Italian. We congratulate the editor on securing such able men as associate editors, and if they are as thorough in the selection of practical matter as Dr. Catching himself, the next issue will be of inestimable value as a book of reference.

The present issue contains 292 pages of practical material, taken, in the main, from the dental journals of 1893 although there are some original articles that were prepared expressly for the work.

The material is nicely classified, arranged and Indexed so that it is in the most perfect form for reference. Every practitioner should have a copy of the book.

The Physician's Wife; and the Things that Pertain to Her Life. By Ellen M. Firebaugh. With portrait of author and 44 photo-engravings of original sketches. In one Crown Octavo volume of 200 pages. Extra Cloth, $1.25 net. Special Limited Edition, first 500 copies, numbered, and printed in photogravure ink on extra-fine enamelled paper; bound in Half-Leather and Vellum Cloth, $3.00 net. Philadelphia: The F. A. Davis Co., Publishers, 1914 and 1916 Cherry Street.

A most interesting book from beginning to end. While a vein of humor pervades every page, the book is filled with facts that clearly illustrate the trials, vissisitudes, joys and sorrows of the physician's wife. It is a companion to Cathell's "The Physician Himself," and the author takes Dr. Cathell to task for almost entirely ignoring the physician's wife in his classical volume. The author is a fluent writer and if the book is once begun the reader will not lay it away half finished. It will be enjoyed not only by the doctor's wife but by the doctor himself.

DISEASES AND INJURIES OF THE TEETH INCLUDING PATHOLOGY AND TREATMENT. By Morton Smale, M.R.C.S., L.D.S., and J. F. Colyer, L.R.C.P., L.D.S. London and New York (15 E. 16th St.); Longmans, Green & Co., Pub., 1893.

This is a manual of practical dentistry for students and practitioners. The authors state that "in compiling this manual, while an effort has been made to enunciate succinctly and plainly the principles underlying the art of dental surgery, yet in no case have the practical bearings of the subject been permitted to be overlooked, and it is hoped in its present form not only will dental students but general practitioners in medicine be able to follow its descriptions and directions with ease and profit."

The book contains 406 pages and is divided into twenty-three chapters; 98 pages are devoted to the subject Abnormalities of the Permanent teeth, which embraces Irregularities of the teeth and their correction. The use of combination plates and springs is advocated but fixed appliances condemned. On page 56 we read: "There is a method freely used in America, which is only mentioned to be condemned, viz., the use of fixed apparatus, although it is true that the patient may be saved many visits from the fact that they can adjust it themselves. On the other hand, the mischief brought upon individual teeth more than counterbalances the benefits to be derived, for no matter how accurately a band, which is not removed for the purpose of cleanliness, may be made to fit round a tooth, it must in a very short period produce destructive processes in the tooth to which it is attached."

The chapter on Caries covering 20 pages is excellent, and those on Diseases of the Pulp, Periosteum, Gums, and others are creditable as far as pathology is concerned. Treatment, while in the main well enough as far as it goes is not as fully carried out in many instances as it should have been.

Altogether the work is a valuable one and the need of just such a book has long been felt. The matter is profusely illustrated which adds materially to its value.

BOOKS RECEIVED.

The Discovery of Modern Anesthesia. By Dr. L. W. Nevius, New York.

Transactions California State Dental Society, 1893.

BRIEFS.

— To use a matrix for proximal cavity when the adjoining tooth is missing, fill the space with modelling compound; warm the metal matrix and press it in between the tooth and the mass. —*B. H. Catching.*

— That fresh pipe clay will stick to the lips very readily, is within the knowledge of most; and there seems no reason why pipe clay disks should not be placed over the orifice of Steno's duct, and so aid us in controlling the flow of saliva.—*British Journal.*

— It seems to me good, reasonable, and logical doctrine that we should refuse to fill roots immediately in all cases of septic condition. We should only choose those roots for immediate root filling in which we are satisfied the condition is aseptic, and has been none other than aseptic.—*G. V. Black.*

— Cases have come under my notice where complete artificial dentures have been inserted, and neuralgia has resulted from the bite being too long or too short. In these cases pain is felt about the region of the condyle of the lower jaw, and on correction of the fault the pain has disappeared.—*J. P. Headridge.*

— I am using the same amalgam that I have used for quite a number of years, and for the past three or four years I have been finishing all my fillings with Robinson's felt foil. It will leave your filling finished as beautiful as a gold filling, and amalgam fillings that have been finished in that way don't look at all like the fillings that I have finished previous to using felt foil.—*C. B. Parker.*

— Dr. Davenport gave account of an operation by which he was able to do good service to some loose inferior incisors. He joined them together by drilling a groove in the cutting edges, and laying in a wire which was fastened by filling the entire channel, thus keeping the teeth firmly together. This succeeded very well for a term of years, and finally he made a pure gold cap, reaching down about a third of the lingual surface, and cemented it on. This was, to date, doing satisfactory service. —*Review.*

— The following is recommended for those who desire soft, white hands:

℞	Lanolin, - - - -	30 parts.
	Glycerin, - - - -	20 “
	Borate of Soda, - - -	10 “
	Oil of Eucalyptus, - -	2 “
	Essence of Bitter Almonds, -	25 drops.

M. Sig. Rub hands with preparation and cover with gloves at night.—*L'Odontalogie.*

— Trichloracetic acid is invaluable in the removal of the gum when it has grown over the edge of a cavity, placing the rubber dam on before the operation. Sometimes when cutting away the gum there is considerable loss of blood, but the application of trichloracetic acid will enable you to remove it without hemorrhage. After the filling is completed, and examined a day or two subsequently, there will be found a healthy condition of the gum, the parts that were burned having sloughed off and healthy action taken place—*International.*

— When facial neuralgia is caused by chronic inflammation of the tooth pulp, the sacrifice of the tooth is not always necessary, for it may almost invariably be cured by destruction of the pulp with powdered arsenic, or temporary relief may be derived by taking a full dose of quinine, and if taken nightly an hour or two before the time of recurrence, will often avert the paroxysm. But when facial neuralgia is due to affections of the alveolar periosteum, or difficult eruption of the wisdom teeth, etc., the teeth should be promptly removed.—*J. Wood.*

— Never hold back or decline to go ahead in treating for relief, in consequence of ignorance as to the cause of the trouble to be treated, but grapple with the trouble as it presents itself, with the most effective means at command, and check, if possible, further advance of the disease, let the cause be what it may. When you check the progress of disease (all variance from a normal state is disease) you will, to a certain extent, have crippled the cause, and will be able to keep the effect of the *cause* in check and restore patients to a permanent state of normal comfort.—*Southern.*

— For many years it has been my habit with soft teeth that are just erupting to wash out the fissures and put a pat of oxyphosphate in them, even if they are not softened at all. If they are dried out, the filling will usually stay, even if no cutting has to be done. This serves as a protection while the gums lie over the ends of the teeth, and while they are still unused in mastication. When the tooth gets well through, and is antagonized and used, the danger of softening of the fissure is greatly lessened. When the upper molars are through they are treated in the same way.—*Dr. Perry.*

— Though a great believer in crowns and crowning, I do not advise their use in any case in the molar region when the natural crown can be contoured or rendered useful by filling or other means. Some operators will sacrifice a large portion of a tooth in order to crown it. I do not hold with them, but would preserve the natural part as long as it can be made to carry on its fair share in the work for which it was intended ; when it fails to do this, the roots will probably bear crowning, and so the integrity of the dental arch may be preserved for a longer period than if crowning were resorted to in the first instance. —*T. Mansell.*

— Professor Dewar, who so startled all by his wonderful achievements last year with liquid air, has now succeeded in reducing our atmosphere to a solid condition ; this being accomplished by placing an empty tube inside another full of liquid oxygen, the latter being boiled off under a high vacuum, the intense cold thus produced bringing the air in the empty tube first into a liquid and then a solid form. Professor Dewar has also succeeded in demonstrating that the tensile strain of metals is stronger in low temperatures ; for instance, iron at 180 degrees below zero being twice its ordinary strength ; the magnetic properties of metals also become stronger in low temperatures. —*Jour. Brit. Asso.*

SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY.

THE thirtieth annual meeting of the Illinois State Dental Society will be held in the Senate Chamber, Springfield, Ill., May 8, 9, 10 and 11, 1894. An interesting program is in the course of preparation. Practitioners of Illinois and of adjoining States are cordially invited to attend.

LOUIS OTTOFY, *Secretary.*

JOINT MEETING OF THE IOWA AND NEBRASKA STATE DENTAL SOCIETY.

THE annual meeting of the Iowa and Nebraska State Dental Societies will be a joint meeting, held May 1st to 4th inclusive, at Council Bluffs, Iowa, and Omaha, Nebraska. An interesting program will be presented. All are cordially invited to attend.

W. C. DAVIS, *Sec'y Nebraska Society,*
Lincoln, Neb.

F. T. BREEVE, *Sec'y Iowa Society,*
Iowa City, Iowa.

ANNOUNCEMENT.

THE Transactions of the World's Columbian Dental Congress are now nearly ready for the final proof reading, it is therefore very desirable that those who want extra copies, and those who would like to subscribe for them do so at once, as it is the intention of the Committee of Publication to print only a sufficient number of copies to supply the members of the Congress and those who have subscribed for them. The subscription price is $10.00. Subscriptions should be sent to Dr. John S. Marshall, Treasurer, 1003 Venetian Bldg., Chicago, Ill.

COMMENCEMENTS.

THE commencement exercises of the Western Reserve University, Dental Department, Cleveland, Ohio, were held February 28th, 1894. The dental degree was conferred upon the following candidates: Hugh B. Mitchell, G. O. De Urfae, J. F. H. Riggs, C. A. H. Anderson.

THE commencement exercises of the Dental Department, Cleveland University of Medicine and Surgery, were held March 21st, 1894. The following candidates were granted the dental degree: W. G. Johnson, J. G. Colton, M. E. Fenton, F. A. Herrick.

OUR AFTERMATH.

DIED—SAILOR.—The friends of Dr. J. H. Sailor, Covington, Ind., will regret to learn that his estimable wife died on Feb. 2, 1894.

THE LATE PROFESSOR BILLROTH.—This celebrated pathologist and surgeon died from heart disease on the 5th inst. As the *British Medical Journal* says, his clinic at Vienna has been for 26 years "a kind of surgical Mecca, to which scientific pilgrims from all parts of the world have resorted in constantly increasing numbers." In 1873 he first successfully excised the larynx for cancer, and in 1881 he first successfully resected the stomach. The total number of his books and papers amount to about one hundred and forty, of which the *Lectures on Surgical Pathology and Therapeutics* are best known to English readers.

DENTISTRY UP TO DATE.—The following which we cull from the column devoted to "Replies to queries" in the *English Mechanic* may perhaps prove interesting, as showing the *advanced knowledge* of the public upon the *modus operandi* of filling teeth. "*Tooth Stopping.*—Pure beeswax is an excellent thing for filling up small holes. Don't kill the nerve, the tooth will soon drop out if you do; but cure neuralgia by tonics, wine, or liver remedies, as indicated. Such a stopping as this can be removed now and then for a rinse of borax or permanganate. When a tooth becomes sensitive to the air, it is a good plan to wear a piece of cotton wool over it for about a day, until the 'cold' is gone."

A TEACHING UNIVERSITY FOR LONDON. Although the report of the Royal Commission has not yet been published, its most important provisions have become known. The Commissioners are of opinion that the existing University should be so reconstructed as to provide for the establishment of an efficient teaching university, without interfering with its present duties as an examining body for students from all parts of the British Empire. They recommend that the necessary changes should be effected not by charter, but by legislative authority, and by the appointment of a commission with statutory powers, as this method would avoid difficulty and delay on the part of the University. With regard to the medical degree for London students, we gather that it is not thought desirable that such a degree should be obtainable on the same terms as the ordinary license to practice, and the University will still be able to require a higher standard of scientific knowledge. We do not find any mention made of a "higher dental diploma."—*British Journal.*

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CONTRIBUTIONS.

THE POWER OF SUGGESTION.*

BY THOMAS FILLEBROWN, M.D., D.M.D., BOSTON.

SUGGESTION in the wakeful state, and without any attempt to produce hypnosis, has been so successfully used by myself as an obtundent for sensitive dentine, during the past six months, I feel that a few words upon the subject may prove useful to many, and not entirely without interest to all.

The many duties demanding my time must be my excuse for presenting remarks so imperfectly prepared, but I trust the important points will not seem to be left obscure.

For the good appreciation of the subject I propose to discuss, it is necessary to understand somewhat fully the results of modern phychical research. Especially the newly discovered fact of a double consciousness or a double layer of mental activity. In the upper plane or layer, so to speak, is the conscious mental activity. In the lower plane or layer, the subconscious or subliminal mental activity resides. For instance, when one passes along the street, he first recognizes what we are conscious of seeing, the second recognizes all that we do see. It is in the subliminal consciousness that the habits are formed. It is in this that the lasting

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*Read at Vermont State Dental Society, March, 1893.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

effects of shock are felt. It is in the subliminal mind that fears become fixed, that sometimes so entirely control our being and welfare.

This subconsciousness directly controls the physical functions, hence, it is through this that the circulation becomes permanently disturbed, and digestion and nutrition disordered. Neuralgic pains and very often rheumatic pains, hypersensitiveness of many parts of the system, sensitiveness of the dentine in most cases depends upon a disordered condition of this subliminal layer of the mind.

The subconsciousness is peculiarly susceptible to suggestion. A very slight suggestion will cause blushing. A little stronger suggestion will produce embarrassment, also fear, joy, sorrow. And all these emotions are experienced without any circumstance connected with the person, to cause them, except the bare suggestion of the idea to the imagination.

Expectant attention has long been recognized as one of the most powerful synergists to the action of medicines. The patient's knowledge of what the medicine is expected to do very often decides what the action shall be.

This is simply the power of suggestion. It was this power that led a good professor of medicine, who practiced in New Hampshire a half a century ago, to think that the compound tincture of gum guiac, was all the medicine needed, in any physician's practice, for it was all that he needed. The oft repeated story of the curative action of brown bread pills is explained in the same way.

Suggestion is the principle and almost the whole power of Naboli, and the multitude of more recently manufactured dental obtundents. Unless anesthesia of the dentine is suggested, very little or more likely no effect is produced.

Now as a matter of fact, suggestion is ordinarily just as effective in inducing anæsthesia of the dentine, without any pretence of using any medicinal agency, as with. More than two years ago I demonstrated that in the hypnotic state, suggestion was sufficient to anesthetize the dentine of the most sensitive teeth. I have lately found that suggestion in the ordinary wakeful state is quite equal to the necessities of most cases. And now I seldom induce hypnosis to increase suggestiblility.

I never urge suggestion upon patients, it is to only a portion that I apply it. Many do not need it, others do not desire it, some object to it. In the last four weeks I have used suggestion for fifteen patients, and, as many of these patients had several sittings each, I made almost daily use of it. Thirteen cases were successful, two patients failed to respond at all, Males I find quite as suceptible as females. The suggestion will in every case quiet the nervous system, and prevent or remove the tired feeling, which is so often produced by the operation.

The method of inducing susceptibility to suggestion is very simple. If the patient has already learned the art of relaxation and repose, the preparation is complete, and they are already to listen to the suggestion of anesthesia of the tooth substance. The principles of the art are well explained in Delsarte's dentalizing process, also in a small volume, lately published upon, "Power through repose."

The operator needs himself to understand the art of relaxation and rest, a careful study of the volume referred to will make the matter clear. This accomplished he will explain to his patient that it is quite possible to obtain relaxation and repose, and that in that condition all disturbance will be better borne, and that all pain about the teeth will be removed.

Place the hand on the forehead of the patient and say, you will now rest down and relax all of your muscles, you will become a dead weight in the chair, your limbs, body, arms and head are feeling heavy. Your muscles and nerves are resting, you are feeling entirely comfortable. Repeat this several times. Then say your tooth is now anesthetized, the sensitiveness is now gone. The cutting will not hurt you, you will not dread it, the sound will not disturb you, if it hurts at all you will not mind it, it will not shock you.

Then proceed to use the engine or excavator as the case may need, gently and carefully, avoiding any sudden movement or cut, feeling all the time a repose yourself and continually repeating the assurance, that the anæsthetic is becoming more and more complete. In this manner the teeth of a patient can be rendered insensible to the cut of an instrument while wide awake, and consciousness not in the least affected.

A patient for whom I tried this lately for the first time, laughed outright and said ,while I was still cutting a very sensitive tooth, "I know and realize this is all so, but I cannot help laughing, and I cannot understand it." This patient is one of exceeding good sense, and very far from believing any unreality.

Any one who will give earnest attention to the matter, and study it thoroughly until he can repose himself, will be able to lead his patients to the same goal.

This method and its results are amply sufficient for all dental purposes, and have the merit of being entirely unobjectionable to even the most radical opponents of hypnotism. Patients themselves can induce this repose, and so in such cases the operator can call for it whenever needed.

There is hardly an operator in the land but has patients fall asleep in the chair, while being operated on and not one of them thought of being disturbed by it. Yet such cases are especially susceptible to suggestion, and such sleep is the quietness and repose and suggestibility that I have described in my paper.

SOME SIMPLE METHODS OF CORRECTING IRREGULARITIES OR FALSE ARTICULATIONS, AFTER COMPOUND FRACTURES OF THE JAW.*

BY DR. C. H. WELLS, HUNTINGDON, QUEBEC.

In order to illustrate that which I wish to describe in this paper, it will be necessary for me to refer to some cases which have been previously described by me in former papers.

The first I would mention is that of young Lumsden, of Athelstan, Que. This was a compound fracture of the lower jaw; breaking entirely through in six different places. The boy was then eight years of age.

The fracture was caused by a ball club slipping from the hands of the teacher, going endways and striking him just in front of the right inferior canine, knocking all the teeth completely out excepting the two six year molars. The boy's mother brought me the front portion of the alveola, containing four teeth, in her hand. The physician who brought him to my office suggested that we dissect out the lower jaw entirely. I said I thought I could make an improvement on that, when he replied that that was all he could do; that he would leave the patient in my hands.

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*Read at the Vermont State Dental Society, March, 1894.

I gave the patient ether, reduced the fractures, replacing the broken bones as nearly to their proper position as possible, with small wire hooks held them in position, when I took an impression in wax, ran my cast in plaster Paris, and made a capping plate completely covering the lower alveola and teeth. This plate I made of vulcanite; to this I riveted a V-shaped piece of metal, the head of the V projecting from the mouth. Through the head of the V I passed a small bolt, soldering it fast there. I then placed a metallic plate underneath the jaw, heavily padded to prevent irritation, passed the bolt from the V through this with a thumb nut underneath, so that it could be loosened or tightened at will. I used antiseptic dressing, got little or no sloughing, and in forty-one days the union was so complete and strong that I discharged the patient without any further treatment, saved all the teeth that I put in, which were all except one lateral incisor, and strange to say he has since erupted the balance of his permanent teeth all in good position, and that there is no deformity or scar that can be noticed.

The next case I would mention is that of a man aged thirty-five, a double fracture of the lower jaw. On the right side the fracture was between the canine and the first bicuspid, and on the left just in front of the canine; caused by the kick of a horse. This case had been treated by two eminent surgeons and discharged as cured.

Five weeks after the accident he came to me, and the only teeth that he could make meet together were the lower right canine on the outside of the first superior bicuspid; the bicuspids and molars of the lower jaw on both sides being outside of those in the upper jaw; and on the left side, when those on the right were touching together, I could place my finger between either the bicuspids or molars on that side.

Finding the union so firm that I did not deem it advisable to break it, I concluded to try some other means of correcting the deformity. I first passed a strong rubber band around the bicuspid and canine on the right, also one over the second bicuspid on the right and the first molar on the left; at the same time another around the central and the lateral on the left, and the two bicuspids on the same side. The patient wore this arrangement from nine in the morning until six in the evening, when I found the spaces nearly closed on the right side and completely so on the left.

I then took an impression and made a capping plate covering all the lower teeth. After running my cast I first cut the plaster teeth short on the right side, then cut the cast through at the fracture on the right side where the space was not quite closed, trimmed it so as to bring the canine up against the bicuspid. I made my capping plate on this cast and so that it would completely cover all the lower teeth; to this plate I riveted a V-shaped piece of metal, which when in position extended from the mouth. Through the head of this V, and soldered fast to it, I passed a small bolt with a thumb nut attached. I then put a metal plate under the jaw heavily padded, but much more so on the left than on the right side, thus giving a constant twisting motion, and with the thumb nut it could be tightened at will.

This the patient wore five days and then returned with the articulation much improved and in the condition shown by the plaster cast, having taken it off twenty-four hours before. You will observe that the bicuspids and molars of the right side were again spreading. I then passed a strong rubber band around the bicuspids on the right and the first molar on the left, and in four hours had them again in position. I tied the two bicuspids and the canine and lateral firmly together and left this ligature on two weeks. I then made a bandage, cutting out a three inch piece from the center and sewing to each end of this a six inch piece of the strongest elastic that I could obtain; to the other end of the elastic sewed the long pieces of the bandage. I then placed the center of the bandage between the elastics under the chin, brought them up the sides of the face and over the top of the head, carried them around to the back, thence forward to the point of the chin and sewed the ends together, also stitched them where they crossed at the sides of the face, thus holding all in position.

The patient wore this about two weeks, at the end of which time the articulation was found to be the same as before the accident and has remained in that condition.

Another case in point is that of a man aged thirty-eight years.

There were three fractures and also caused by being kicked by a horse. One fracture on the left united in very good position, the other not quite so well; but the one on the right was bad as shown by the cast. The front end of the right side was thrown out and up so much so, that the only teeth that would meet together were the right inferior canine and first superior bicuspid. This was the condition of the mouth when I first saw the patient eleven weeks after the accident and firmly united in this position.

This case I treated similarly to the last mentioned, with the capping plate, cutting the cast through just in front of the canine on the right, bringing the cast into the proper position; when the capping plate was made I beveled the imprints of the teeth in the rubber so that by tightening the thumb nut, the teeth were brought in on an incline plane to their proper position, and by padding more heavily on the left than on the right gave the jaw the twisting pressure that brought the left side up to its proper articulation. I found in ten days that I had obtained a perfect articulation throughout the whole mouth.

I then put on dental floss ligatures, holding them this way for three weeks after which they remained.

BEESWAX AS A ROOT CANAL FILLING.*

BY DR. J. H. COLLINS, GRANVILLE, N. Y.

The only apology I have to offer for appearing before you this evening, is the desire to give something in return for the many good things I receive from the meetings of your society, from year to year, as I am enabled to meet with you. When the invitation came for me to have a paper on some subject that would be of interest to the profession; of course, the first questian to arise in my mind was, what shall the subject be? What can I offer the society that is *new* regarding any particular operation; for as you all know, the various methods of doing all operations pertaining to dentistry are so fully explained and have so many adherents, that anything new is liable to be met with sneers and doubts; but at the risk of all this, I am going to venture to give you my method of filling root canals with bees-wax.

The canal should prepared as for any root filling. Of course it should be made asceptic before any filling is introduced. I then take a small piece of bees-wax and roll it between thumb and fingers until I have a small round piece about ¼ inch in length, I have four or five of these laid on a mixing slab or mirror, or anything cool (if it be a warm day), otherwise on anything handy. Dry the canal thoroughly with cotton on broaches, then with the hot air syringe. I heat the tooth until it is fairly bleached, and then to make sure that the upper end of the canal is dry, insert a goon sized broach or small steel wire, heated red hot, just as long as there are indications of moisture which will be known by the hissing when the hot wire comes in contact with it. This treatment throughly kills all traces of living organisms, micrococci, bacteria, or any other bugs which might remain after your treatment with bichloride, peroxide, or whatever you may use in the canals to make them asceptic.

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*Read at the Vermont State Dental Society, March, 1894.

Now, having your canal dry and hot, take one of the small pieces of wax in a pair of pliers and insert it into the canal, gradually forcing it as it becomes warm. When it is all in, follow it with one of the broaches or wire again heated red hot, which fries it into every tubuli, and the wax will follow the wire to the apex; then use the hot air syringe again, immediately following it with another piece of wax, and before this becomes cool introduce a few shreds of cotton, which will form a ball and force the wax more solidly ahead of it. Then fill pulp cavity and chamber with what you wish. The wax makes a firm, impervious filling that neither shrinks or disintegrates, and if some of it goes through the apex it is tolerated by the membrane, where it becomes encysted. Some four or five years ago I had a case of a central that had a fistulous opening, had been discharging for two or three years, the apex had become considerably enlarged. After getting the root thoroughly treated and filled, as before directed, I looked at the fistulous opening, through which I had passed peroxide of hydrogen and bichloride and was surprised to find a plug of the wax protruding through it, which, with an excavator I removed to the process, the tooth remaining quiet ever since. Last May, at the annual meeting of the New York State Dental Society, Dr. Palmer of Syracuse, a man ripe in experience, thinking he had something new, told the society he was experimenting with wax and paraffine for root fillings. He had small glass tubes which he would heat and draw the ends until they resembled the apex of a root; he would then warm them with the hot air syringe or an electrode, then put in his wax and through the glass he could see the wax melt and follow to the end of the wire; he also used the Evans root drier with as good succcss.

Immediately after the session I had a talk with him and told him of my experience; he was quite well pleased and assured me he would continue the use of wax as long as he got as good results as he had experienced; adding that for several reasons it was the best filling for root canals he had yet found. It is easily removed, should necessity require, and when it is your canal is free from the odor attending one filled with gutta-percha, or any other filling that I have ever been called upon to remove. If by accident the crown gets broken off, the root is still filled and you can easily enlarge the lower part of the canal for a crown without having to drill out a lot of gold, amalgam or oxychlorid and still *know* that the apex is hermetically sealed. This, gentlemen, is the method I have pursued for about ten years with satisfactory results.

PRESIDENT'S ADDRESS.*

BY DR. A. J. PARKER, BELLOWS FALLS, VT.

As our reflections are cast upon men and things of nature, can we but see that the design of the Creator of this vast universe was that each being and thing created should fill some special sphere. All nature goes to substantiate this theory. "Can we gather grapes of thorns or figs of thistles?" There is in animal life many illustrations where the wants of life are supplied by the same material, yet producing each according to the specialty for which they were created.

From May to November, 1893 stood upon the shore of Lake Michigan what has been termed the "Magic City," "The Dream City," and therein was magnificently illustrated every conceivable specialty of man and nature. At this great center all nations halted to gaze in wonder and admiration upon our national glory. This being the crowning event in America's history, here, every nation and every tongue met to display the best and grandest things their country could produce, and like a great and bountiful harvest poured forth their riches as tribute to the World's Columbian Exposition, making it the most complete and wonderful display ever known to the world. It is an established fact that man must meet competition in his specialty in order that the highest results be accomplished. Competition is what stimulates man's ambition, makes his brain to work cunningly, bringing together abstract ideas and giving off complete, definite and tangible special ties. Observation of what has been accomplished by another makes clearer the way and enables us to set a bound, and focus our aims and ambitions for the future. Of a truth it has been said "there is nothing new under the sun," for into nearly every new thing is worked something old. In the great World's Fair, nation vied with nation showing the achievements in mechanics, architecture, art, and in science, the proof of which was evident to all who saw the immense buildings with glittering domes, the great arches and colossal statuary. The charming effect of the electrical fountains playing while the evening shades deepened, and the gliding of the Venetian gondolas over the deep lagoons is no doubt indelibly stamped upon the memory of those who were so fortunate as to witness the one sight of a life time. And as surely as the death of the seed grain in the ground gives significance to a newer and better life in the formation and multiplication of other seed, so the passing away of these great and grand events will inspire works whose character will exceed in beauty and usefulness anything that has yet been produced by man. The Great International Columbian Dental Congress which met in Chicago, the city of fame, was a grand feature and emblem of the wonderful strides and progress that has been made in our loved art since the landing of the celebrated character from whom it takes name. This Congress was a meeting of dentists from all parts of the world who met to interchange methods and ideas, and to behold all the latest appliances and apparatus for the comfort and ease of patient and operator. The tendencies of all things in America to-day, and what all are seeking for, seems to be rapid motion or speed, and dentistry comes in for its share. How may we best accomplish ease and comfort for our patients while operating upon them? The answer is by rapidity of motion or speed. I believe it is possible to perform painlessly what would otherwise be attended by great physical suffering provided we can do it with sufficient speed. One has said "ere long we shall be able to travel across the continent in a very few hours, and take a trip around the world for a summer vacation," and all this through the development of speed. To-day to keep pace with our profession we are compelled to possess this characteristic speed, for who that is of the progressive nature desires to travel along in the furrows made by his father and thus bring up the rear of the forces who are now so nobly and rapidly advancing. History reveals no great conquests gained, or victories won by any slumbering souls. Dentistry as a specialty of medicine stands in the foremost rank in progression, and this brings to mind an incident in real life. A certain dentist told me he never entered a certain brother dentist's office without beholding something new and of a character original; he stated that he never saw that man idle, he was forever foraging or searching for some yet unidentified jewel. Now this is just the characteristic we as progressive dentists must possess. I am to-day, as I have stated previously, proud of my profession, and proud of my society, The Vermont Dental Society. And why? Because they have so noble and grand a record. I believe they have been styled "a veritable bee hive," so active were they. Some may say it is because of the mid-winter meetings, perhaps it is, but I believe it to be a characteristic of the Green Mountain boys. It seems to be an inbred quality of their nature. I can safely say all this not being a Vermonter by birth myself, and I find those who mingle with them soon catch the spirit of their enthusiasm. I shall always feel like giving old Vermont and her people the royal honors.

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* Read at Vermont State Dental Society, March, 1894.

But to return to our specialty, Dentistry, we have made fine progress thus far, and what more can we do to raise our already high standard of excellence. A friend of mine who is now in the practice of dentistry in Germany writes, when asked why he did not come back to Vermont to practice, "When I get rich enough to live in Vermont, whether I practice or not, then I am coming back to help you raise your standard." Now if every man in the practice of dentistry in our State to-day was bound to get to the top round of the ladder we should hear no such reports from foreign countries. It seems to me this means our prices are so low and so cut down that a man must necessarily labor long and hard in order to accumulate any considerable money. It is a great temptation to some to make prices lower than their competitor's, because it will, with a certain class of people, influence them to go to the cheapest man. It is truly American to always desire something for nothing. Would that people in general were better educated in matters pertaining to the organs which beautify (when properly cared for) the human face. If they were sufficiently enlightened upon this subject, all those who are resorting to flowery eloquence on paper, deceiving the public, pasting placards on fences, bridges and trees, calling attention to their exalted superiority in the art of dentistry, would stand but little chance of obtaining patronage. All these things tend to degrade dentists and dentistry. It is not right, and if a law could be framed to put a stop to it, it would be a great blessing to humanity. We are in dentistry for the money there is in it it is true, but if this is gotten together with a curse upon us and the profession we represent, what glory or pleasure can there be in it. Notwithstanding these obstacles which we have to meet in our profession, I am a firm believer that pure and undefiled dentistry will be victorious in the long run, and each dentist who is characterized honest and noble will be the one who seeks not to force his work upon the public unless it be in character such as will do him credit, as well as be satisfactory and pleasing to his patrons. By such a mode of procedure each operation will be likely to excel, until a height of perfection is attained which will add no minimum limit to the value of his services. This is the way to raise our standard. Again, we should spare no pains in qualifying ourselves to do all we claim, and then improve each opportunity to prove practically to the public our thorough qualification, thus they gain confidence in the profession and will be more willing to place themselves in our hands for treatment, and our success depends upon the confidence of the people. Our specialty furnishes plenty of field for the most enthusiastic workers, and there is any amount of room at the top while the lower ranks are crowded. Men have died, and men continue to die, who though all that was mortal of them be long changed to dust and ashes, yet their names still live, they are rendered to the world immortal. It is thus possible for us to so live and practice our specialty that our works and their influences will never die. Brothers, let independence and sound judgment characterize all our movements, and may that brave spirit that characterized Columbus in meeting the difficulties which he was forced to in bringing to light this beautiful land, ever be ours.

One year ago it was your good pleasure to grant me the highest honor that was in your power as a dental society to confer upon a brother dentist, by making me your president. I take this time and opportunity to express my gratitude and appreciation, thus acknowledging your kindest of motives, at the same time hoping to have not only satisfactorily filled this, the highest office in the Vermont Dental Society, but to have been worthy the confidence thus reposed in me, and if possible to have helped the onward and upward movement of this society. With the increase of knowledge comes an increased responsibility, in proportion to the knowledge will be the demands, and this of necessity. The greater degree of proficiency we attain the higher will our aspirations be centered. The year of 1893 has been an eventful year, one long to be remembered. No doubt many a book will be filled to overflowing with descriptions of the beauty and magnificence and honor with which our country has been blessed in the celebration of its four hundredth birth-day.

Finally—

> " From ice-bound lands where weary stars
> Look down on nights a half year long;
> From lands by old historic wars
> Made rich in legend and in song
> From every country, every clime
> Will come the peoples of the earth
> To join the pageantry sublime
> In honor of thy birth,
> Columbia."

ADDRESS OF WELCOME.*

BY MRS. DR. G. W. HOFFMAN, WHITE RIVER JUNCTION, VT.

Search where you will over the wide world, look at any time since man began his wandering outside Eden, and you will find those of similar purposes and aims congregating together, and devising ways and means to further their own special plans.

Very few and simple were the first demands made of their uncultured minds; but once awakened the inate powers to move on and grasp new problems, have carried the mind of man above and beyond material and finite things very close to the Infinite. These wondrous achievements have only been accomplished by the centralization of power, the keynote of American excellence.

Without this grand focus of intellect, this unity of minds on any given object we should be where the masses of the old world are to-day stolidly walking in the footsteps of their ancestors.

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*Read at the Vermont State Dental Society, March, 1891.

Just so long as the American dentist divided his time between dentistry, medicine, pharmacy, and other callings, just so long was his work inferior and below par.

But when the dentist dared to say, here is a field broad enough for all the brains I have, here are points that the medical practitioner has never noticed, but which I will investigate and experiment with, then, and not till then, did the tooth puller become a dentist.

What he endured in the polite taunts, the supercilious smiles, the undisguised insolence of neighboring professions, will never be known, except by those who passed through, and helped break down the barriers, which fettered the dentist of only fifty years ago.

Occasionally a little of the old time arrogance is witnessed, but happily for us time has so case hardened us that we are bullet proof, and the missiles rebound to those who fire them.

This unity of thought and action which exist among members of different occupations, and professions, is the secret of their strength and growth; for the adage "United we stand, divided we fall," is truer to-day than when is was uttered.

A feeling of kinship is engendered by close companionship and similar aims in life.

Our meeting year after year, in spite of the uncertainties of fickle March, is living proof of my previous assertions.

Deeper scientific research will be required of the dentist that is to be. The same man will not be expected to fill, treat, regulate, and perform all the mechanical manipulations as he now does. There will be specialists who will carry these various branches to a perfection hardly dreamt of. We have a few even now, and the needs of the times call for more.

Old friends, we heartily welcome you as we have done in the past, to the best of our thoughts and experiences. May you find here and there some few ideas to supplement your own fertile brains and render life's daily tasks a little nearer perfection.

When you again resume the routine of your office work, may pleasant memories of these few days together linger by to stimulate our waning energies. May we feel that the wheel of Time moves a little slower for us, as we search for some occult principle, with a school boy's zest, and above all must we guard ourselves from growing rusty or small minded. Herein lies the secret of growing old gracefully, keep in active sympathy with younger associates and familiar with the leading ideas of the day, and the feeling that we are pushed to the wall and left behind in the race of life, will not haunt us.

To visiting dentists who honor our society by their presence, we cordially bid you welcome. It awakens a feeling of pride and strengthens our independence to see such tangible evidence of our own worth to humanity and the good we are engaged in. Your presence speaks louder than it is possible for your lips.

In conclusion, as the chosen representative, or rather, the mouth piece of the officers of this society, I welcome you one and all, not only to our 18th annual meeting, but I welcome you to another year of renewed endeavor, and hard work, to broader views and more generous thoughts, and to kindlier impulses. And finally I welcome you to what should be the constant endeavor of each and every one, a life made up of good and noble deeds so well and faithfully performed "that when the summons comes to join—

> The innumerable caravan, which moves
> To that mysterious realm, where each shall take
> His chamber in the silent hall of death,
> Thou go not, like the quarry slave at night,
> Scourged to his dungeon, but, sustained and soothed
> By an unfaltering trust, approach thy grave
> Like one who wraps the drapery of his couch
> About him, and lies down to pleasant dreams."

THE DENTIST AND PATIENT.*

BY DR. L. A. VARNEY, WINDSOR, VT.

It is with a considerable degree of diffidence that I come before this assembly "The Vermont State Dental Society." If I had not been present at these meetings many times, and learned by actual contact with the members, of the large-heartedness and sympathy which prevails, it would indeed be a hard task for me to read before you the simple words which I have penned. But your pride and zeal for the profession which we represent bid you call upon men, not only to be full by reading, to be ready by conference but to be exact by writing. We not only have literature whereby we may become acquainted with the principles and methods of our science, but we are brought into contact with the older and more experienced of our number, and conversing with them we become ready men. Then we are called upon to write, to formulate our ideas, to break down the barrier of silence. It may be that *the* only one edified is the writer, but he certainly is, and becomes a more exact man for the attempt.

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*Read before the Vermont State Dental Society, March, 1891.

Young men, do we appreciate the efforts of our older brothers to bring about this state of affairs, wherein we have so many privileges consummated in the words "Vermont State Dental Society?" If not, let us begin here and now to generate a little of that spirit of praise due to those whose untiring efforts have brought about this source of elevation in our profession.

It is my purpose this morning, to speak of the dentist and the patient, but more especially of the former.

There is a higher meaning attached to the word *Dentist* to day, by virtue of the requirements of the man who possesses it, than at any former time.

Researches have proven that teeth were plugged for men, among nations, which have long ago passed into oblivion, and their names with them, yet evidences of the science are found among their mummied remains. At the dawn of our own nation's history, this science was still obscure until, in the early years of the present century, it became a practical, tangible and living reality; but the requirements of the dentist were not great, as considerable celebrity could be gained by successfully extracting a few teeth, or carving from a piece of ivory a substitute for a lost tooth, which would resemble that organ as nearly as the prairie ox-cart does the modern phæton. Much credit is due those in whom the germ of our great science found nourishment, and developed into practical and perhaps not entirely without theoretical manifestations.

The formation of the New York Society of Dental Surgeons, about the year 1838, was the first society of the kind organized, and although its existence was brief, we must admit it was the dawn of better things to come. Its failure was due to the lack of interest among the members to combine their efforts for the common good of all. The experiment of associated effort for the advancement of dentistry, and the powerful stimulus arising from concentrated thought and action were still vague in regard to that science. Then too, the plans of organization being more or less imperfect, they might not have worked with definite objects in view or employed the best means for their attainment, yet the few meetings of this society were not wholly devoid of interest to the profession, and if no marked benefit resulted, it must have awakened a spirit of emulation among those who were immediately connected with it, thereby molding into more definite form the various contingencies of practice and theory embodied in the man *Dentist.*

A year or two after the dissolution of the New York Association or about 1840, the American Society was formed. This organization demanded qualification as to character and ability, vouched for by members of the society, showing that the dentist was rising to a higher plane than formerly, more being required of him both in ethics and practice. From this time and I think we may justly deduct from the influence of these organizations, a great many others sprang into existence, not only in this country but in England, and what a powerful influence these have been in shaping the minds of those who were continually joining the ranks of our profession. In 1840 the Baltimore College of Dental Surgery was chartered, the first institution of its kind ever established, and from this time the requirements of the dentist have gradually broadened. Histology, pathology, therapeutics, chemistry, anatomy and physiology became a part of the dental education, and the dentist no longer gaining a reputation as an expert "knight of the forceps" or turnkey, but having a nobler ideal based upon the unconvertible laws of nature, which these sciences had revealed, sought to heal the organs which nature had supplied, instead of rashly and injudiciously sacrificing them to the permanent detriment of his patient, and showing to a certain degree, what the development of his powers by the aid of scientific investigation, could do for suffering humanity. This is the platform the first educated dentist had to rest upon, and although the light of science might have been at first dim, it has shone bright enough not to have been lost sight of in the past fifty years, and the dentist has developed along these lines and upon this platform. No department of medical science has made such rapid progress in the last quarter of a century as histology and as a result we are filled with wonder and amazement at the complicated structure of a human tooth composed of aggregations of individual cells. Knowing the structure and constituent of these organs has been one of the most powerful agents in their preservation. In surgery the germ theory has revolutionized the method employed. In medicine, its influence is equally great. We have learned to treat devitalized pulps by using something that will destroy or render sterile these organisms.

In the light of these illustrations a picture may arise before us of the advancement of our scicnce—of that which really exists and that which may be done.

We have realized the important sphere a dentist occupied who has made his practice by the hand of science, and what is required of the dentist to-day, is based upon the mighty advancement of the last half century. A man is not born a dentist, only thorough training and study can make him one. Inventions have been made whereby almost everything may be done. Some have proven good and some otherwise. Nearly all have proven good when used by men who have combined theory with practice. Vulcanite, although a *great* boon, in the hands of many has proven a curse, and the bridge-work of to-day, one of the noblest works of mechanical arts has been abused by ignorant hands.

Let the dentist cease to cry against it, for in so doing he shows his lack of ability to perform it successfully, or a lack of common sense in denouncing that which he has never tried. There is no branch of dentistry which requires so much of original manipulation as bridge-work and gives back to us what was lost in the advent of vulcanite. The dentist of to-day is surrounded by privileges. Opportunities are almost forced upon him. He is heir to the best attainments of the past, and has a vast body of contemporaries from whom he receives valuable aid, and it is logic for one who has been excelled by another in his own calling to believe *he* might have done better.

There is no department of medicine in which the methods employed, and the results obtained are more manifest than in dentistry. From the crude practitioner of the past, whose remedies were principally steel and prosthesis, to the time when it became evident that the works of the Creator were worthy of preservation, although broken down and diseased, is a great step, and it requires little argument to convince the dullest mind of its importance.

Gentlemen, we have been dealing with the part which science has exercised with the laws of nature and the worthy works of the Creator as being instrumental in forcing the requirements of the dentist to its present high degree, but do we owe nothing to the multitudes who have placed themselves in our hands and given us opportunities for practical advancement?

Our patients, I believe, have played an active part in raising our standard. Their needs have kept pace with our discoveries and as often as new and useful methods are presented they give us opportunities for exemplification. They demand honor, integrity, cleanliness, thorough manipulation, artistic skill, in fact our achievements cannot be too sublime or our suggestions too numerous, if they contain the element of mutual benefit, to be appreciated and in many cases entered into by our patients, and I presume to say and believe I shall not be disputed, that patients in no other profession call so explicitly for gentlemen in the broadest sense of the word as in dentistry. And the dentist possessing these qualities need not advertise his superiority, for he is giving every day an unwritten page, to those with whom he comes in contact, far more impressive than anything that could be done with ink, and its veracity is not questioned by the most egotistical. It is the dentist's privilege more to-day, than ever before, by virtue of his requirements, when he has completed his labors, to leave such a monument to those who have come under his care, that in after years they may look back upon the perishable surroundings, but the monument shows brighter than ever.

VERMONT STATE DENTAL SOCIETY.*

At the close of the 17th annual meeting at St. Albans, in March, 1893, Dr. G. W. Hoffman, of White River Junction, invited the members to hold the 18th annual meeting there, and the St. George's Hotel was found to be a delight and easy centre. The meeting opened on Wednesday, the 21st of March, at 7:39 p.m., with prayer by the Rev. Dr. Snow. The President, Dr. A. J. Parker, of Bellow's Falls, occupied the chair. Dr. Wright offered a resolution of sympathy with Dr. S. J. Andres, of Quebec city, an honorary member of the society, which was unanimously carried, and the society requested to convey the same to the

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*We are indebted to Dr. W. G. Beers, Editor of the *Dominion Journal*, for these notes on the meeting and discussion.—Ed.

doctor. Dr. Andres has been ailing for some time, and was unable to be among the many friends in Vermont who were always glad to see him.

Dr. Hoffman then read a charming address of welcome, which had the unique feature of having been written by his wife. (See page 213, of current number.)

Dr. J. N. Collins, of Granville, N. Y., read a paper entitled "Filling Root-Canals with Beeswax." (See page 207, of current number.)

Dr. G. A. Young, of Concord, N. H., believed, after long experience, that it did not much matter what the roots are filled with providing gutta percha and cloroform is not used. He has never seen a case in which the gutta-percha had not absorbed the fluids, and in fact, if removed, a strong odor was present from the pulp cavity. He approved of wax, if he approved of anything. He removed one gutta-percha filling put in by Dr. W. S. Curtis, of West Randolph. It was sweet and clean, because it was crude gutta-percha. Beeswax withstands acids. Only wish we could satisfactorily fill the crowns as well as the canals with beeswax. It would make dental practice fun. However, he declared that he did not believe in putting anything into the canals; has got over all medicating of canals; believes that the open canals are safer than if filled. If he feels like it he puts gold into the roots as far as convenient, but is not bound down to any cast-iron rule.

Dr. G. Lennox Curtis, New York, asked Dr. Young if he ever had alveolar abscess following his treatment of "no treatment." Dr. Young replied that he had not any more, and he did think he had so much as formerly.

Dr. Curtis said it was new to him, and that he would like it scientifically and statistically investigated. Instinctively, he approved of wax; it left no odor. Best results he has seen were when chloro-percha was used, after thorough cleansing to the apex, sterilization, perfect drying by hot air, paper points, etc. Does not look reasonable to omit filling root-canals, leaving air for decomposition, and if heated, drawing back the fluid elements, which must create inflammation and abscess.

Dr. Hoffman, White River Junction, described cases where canals were left empty and found no odor. Never believed in the air theory before. Since then never filled root canals. Sterilized with hot air; inserted filling, and did not make any special effort to get it up the canals. The result of this practice has been satisfactory.

Dr. Bowers, of Nashua, N. H., tried the air theory for three years; does not always adhere to it; doubts if the apex of roots can always be reached. The only dentists who accomplish miracles like that are recent graduates—they never err or have failures.

Dr. C. K. Gerrish, Ester, N. H., then made some very interesting remarks on "The Unknown Dentistry of the Future." He claimed to be a bit of an old-fashioned dentist, not apt to be carried away by every new fad. Had used one gold foil—Abbey's—for thirty years. Never filled a tooth exclusively with adhesive foil. He showed the wonderful knowledge possessed by the Egyptians in the arts and sciences, and what they knew about dental practice. He read a very quaint advertisement of Josiah F. Flagg, in the early part of the century. With respect to the present rage for hypnotism, fifty years ago it was called mesmeric power. The speaker was associated in early life with Dr. W. L. Johnson, of Newburyport, Mass., and he saw thousands of teeth extracted by Dr. Johnson, after he had "mesmerized" the patients, and in no single instance with bad effects. Bleeding, too, was controlled by hypnotism. Dr. Gerrish covered a great deal of ground in referring to the past, and the prospects of the future dental practice. He saw inlays thirty-two years ago retained by gold foil. All honor to the men of fifty years ago, who showed they were artists, and whose success in the face of great difficulties ought to humiliate those of us who think "we know it all." The doctor concluded by drawing an imaginative and humorous picture of the future dentistry—provided future generations have any teeth.

Dr. G. A. Young was to have read a paper, but in his usual bland way he hypnotized the audience to forgive him, as he had brought several good "trotters" from New Hampshire, including the President, Dr. Bowers, and other officials of the State society. Dr. Young is an institution which the Vermont Society begin to feel they cannot do without. As the founder and head centre of the "Trotters' Club," he is not only possessed of great mines of practical knowledge and skill, but a deep vein of humor which runs like a golden thread through his most serious remarks.

On Thursday morning the members re-assembled.

Dr. R. M. Chase, of Bethel, opened a discussion on the subject, "Should Dentists Administer Secret Drugs and Nostrums?" He contended that it is as unethical as it is unscientific to administer drugs the composition of which we do not know. No local anæsthetic should be used, the formula of which was not published on the label. It had been shown by Dr. Kirk that most, if not all, of these preparations contained cocain, and it is, moreover, a notorious fact that some dentists are publicly lying in their disgraceful advertisements, and pretending to have the monopoly of the use of some such preparation, ignorant whether or not it contains constituents dangerous to health and even to life. There is a class of men who neither respect themselves nor care for the public, more than as patients whom they can deceive. It may be, too, that many very honorable men use these nostrums, believing that they are harmless. But how can they believe anything about their effects if they are kept in the dark as to their formulæ?"

Dr. Hoffman said that if any men in any dental society will stultify themselves by subscribing to a code of ethics, and then pretend before the public that they have the monopoly of a nostrum of the kind, they lie and should be expelled. A *dentist* who does it is a sneak of the first water, and should be treated like any other sneak.

Dr. James Lewis, of Burlington, the oldest practitioner in the State, and one of the honorable and respected "fathers" of dentistry, remarked that we claim to be a branch of medicine, but unless we enforce our ethics we do not merit the claim. When advertisers declare they have something new, when they know no more than their patients what the nostrum contains, and do not know the physiological or toxical effects, they injure the profession and they rob their patients. Their claims are mere ghost stories. In Nashville Medical College, the Faculty erased from the graduates' register the names of those who were using such deceptive advertisements. Dental societies should do as much. Hundreds of good teeth are extracted by these advertisers. He believed, from his experience of active practice of over half a century, that there were fewer teeth saved by filling than thirty years ago.

Dr. George O. Webster believed it was necessary for the honor of the Society and for the protection of the public that some action should be taken. He did not believe in any dictatorial despotism which would force men, by law, to avoid these nostrums; but he believed in cleansing the skirts of State societies even of any silent recognition. The Society should not be used as a cloak to enable anyone to advertise these nostrums. He would prefer to see men repenting and becoming ethical, rather than subjecting themselves, by such conduct, to the reproach of their brethren and possible actions for damages some day from their patients.

Dr. G. L. Curtis said, the worst feature was the deceptive advertising. If men felt they must do it, they should resign their connection with the Society, because their influence was a direct injury and insult to members who believed in being ethical.

Dr. James Lewis recalled the use of arsenic by Spooner and his contemporaries, for reducing sensitiveness of dentine, and the serious results which frequently followed. Some of these local anæsthetic nostrums contained liquid arsenic.

Dr. George F. Cheney, St. Johnsbury, asked, How shall we educate the public? In the analysis of a medicine recently put upon the market, it was discovered that there was enough arsenic in a few drops to kill! Dr. Kirk in his article in the *Cosmos* had shown that of ten local anæsthetic nostrums, only one was free of cocain (Barr's). He thought that the public press should publish such facts.

Dr. W. Geo. Beers believed that if the pnblic knew the fact that dentists who used these nostrums were ignorant of their composition, they would be loath to have them injected into their blood. Dr. Kirk deserved the thanks of the profession for exposing the duplicity, not only of the men who manufactured these nostrums, but of the men who ignorantly used them. It was a fact, nevertheless, that the public tolerate, if they do not positively enjoy being deceived. He suggested that the American Dental Association consider this question and pronounce authoritatively, not only on the ethical question, but as to what preparations can be safely used. It would be well to suggest a reliable preparation, and publish the formula under the official approval of the national representative associations (American Dental and the Southern Dental).

Dr. J. L. Perkins, St. Johnsbury, suggested that attention be drawn to the fact that the gum tissue has frequently sloughed as the result of the hypodermic use of some of these nostrums.

Dr. W. S. Curtis, West Randolph, agreed with the object proposed, but reminded the members that it did not apply, so far as censure in use was concerned, to preparations the formula of which was known and intelligently approved of by the operator.

On motion of Dr. Chase the following resolution, enbodying one passed by the Connecticut Valley Dental Society, was unamiously passed :

"Whereas, Several compounds and processes, more or less familiar to the dental profession, have been and are being promiscuously advertised as secrets, and those which have been proved either useless or injurious, advertised as wondeful, and

"Whereas, Such false and vicious advertising is a detriment to our patients and ourselves, and

"Whereas, All known local applications, powerful enough to completely destroy the sensibility, are capable of doing serious injury to tooth and structure, and possibly to health, therefore,

"*Resolved*, That we hereby condemn the practice of the use of such nostrums by the profession, and recommend that any and all legitimate means be used by the members of our societies to educate the public and guard them against the possible harm which may result from the use of these nostrums."

It was decided that secret compounds and nostrums include all compounds put upon the market without a printed formula furnished to the profession at large.

A paper and a talk on "Alveolar Hemorrhage," by W. George Beers, followed. The writer explained the physiology of coagulation, the causes of imperfect coagulation, the varieties of hemorrhage—capillary, venous and, arterial—constitutional and local conditions which predisposed to hemorrhage. He showed that precaution was necessary in dental practice not to venture upon surgical operations, involving the loss of blood, in marked cases of anæmia, when the fibrin is in a state of inefficient solution, the blood of feeble coagulating power, and the vascular trunk of feeble contractile power. The danger of lancing children's gums in certain constitutional conditions was shown. Also the fact that, where leeches are used, the blood coming from the body as soon as the leech is removed will never coagulate ; and that even in ten minutes after the leech is withdrawn, it will take one hour for the blood to coagulate. It is said that this is due to a secretion in the leech with which it impregnates the wound. Attention was drawn to vicarious bleeding during the menstrual period, and the risk of operating at that time. The writer believed that some such physiological localized concentration, followed by vaso-motor disturbance, especially in neurotic girls, as explained by the so-called miracle of the "Stigmata," was apt to occur when teeth were extracted during the catamenia. The decrease of hemorrhage was thought to be due to the better blood as the result of better food, abundance and cheapness of fruits; better instruments, the abandonment of the old key of Garengeot, etc. Sir Benjamin Ward Richardson, in a paper read before the Odontological Society of Great Britain recently, attributed the decrease in hemorrhage in his experience to these facts. It was shown that there need be no anxiety if syncope occurred. It relieved the arterial tension. Stimulants should never be used. They increased it. The various orthodox methods of arresting hemorrhage were mentioned, and attention to the great value of *Lycoperdon giganteum*, or common puff-ball, which Sir Benjamin Ward Richardson introduced nearly forty years ago, before the then-existing College of Dentists of England. It had been used for centuries to stupefy bees before robbing the hives. Dr. Richardson saw this done, and was led to try it as a narcotic. The writer had it analyzed some years ago, and it was discovered that its styptic property was due to phosphate of soda. It acted chemically and mechanically. When he was a student, Dr. Charles Brewster, of Montreal, was using it in his dental practice, and in 1871, after using it for thirteen years, he brought it before the profession in the *Canada Journal of Dental Science*. Dr. Brewster, had for years been experimenting with it, and having medicated it, and added greatly to its natural advantages, he was induced to place it in the market for our use. It was unexcelled for hemorrhage, alveolar or otherwise, and Dr. Beers suggested that the dried and medicated *lycoperdon* be tried in the hemoptysis, where the divided artery is in the lung and the mineral acids are used.

The paper was discussed by Drs. G. L. Curtis, Lewis and others.

Dr. Thos. Fillebrown, of Boston, who has distinguished himself for his concentration of interest in suggestive therapeutics and operations applied to dental practice, gave a most fascinating lecture on "The Power of Suggestion"—(see page 201).

Dr. Fillebrown demonstrated the power he described, in the mouths of several patients.

Dr. C. H. Wells, Huntingden, Que., read a paper illustrative of his mechanical treatment of a number of fractures, which had been caused by the celebrated kicking horses of the Province of Quebec (see page 204). The paper was well discussed by Dr. G. L. Curtis, who paid the essayist many compliments. It pleased him specially to mark the conservative treatment. General surgeons would not have saved the teeth in the cases mentioned.

In the afternoon Dr. Gustave P. Wicksell, Boston, gave clinics with "Richmond, Buckern, Wicksell Crowns." Dr. F. R. Jewett, of Woodstock, on "Crown Work." But the *creme de la creme* was the series of surgical clinics by Dr. G. Lennox Curtis, of 124 West 34th St., New York. We will not say that Dr. Curtis is a rising oral surgeon; he has risen, and shines in full effulgence as a cool, wonderfully rapid, and skillful master of oral surgical science. The doctor exibited one osteo sarcoma from the antrum as large as a hen's egg. The case was due to a blow on the malar bone. A portion of the jaw and teeth opened into the antrum; the growth formed in the antrum, and destroyed portions of the malar and superior maxillary bones, and the hard palate. Dr. Curtis removed the teeth with the slightest ridge of alveolus, with very little effort, and the whole tumor was caught with the forceps and withdrawn from the antrum. The periosteum alone remained over the malar and palatal bones. Hemorrhage was checked by very hot water; wound firmly packed and antiseptic precautions used. No secondary hemorrhage. Case was dismissed in two weeks. In six weeks the boy, who was sixteen years old, returned to duty entirely cured. An artificial jaw of vulcanite was afterwards fitted. The operation occupied twenty-five minutes. Dr. Curtis exhibited photographs of the case, before and after the operation. No deformity, as there was no incision on the face; Dr. Curtis using various appliances, most of them of his own invention, on the dental engine. He alluded to an artificial portion of jaw, for a similar case, made by Dr. W. G. Beers, which was fitted to a patient. It included an entire upper set of teeth, and an obturator to close an accidental cleft, and was retained *in situ* by a gold spring attached to an apparatus of gold in the lower maxillary. After wearing for three months, the folds of the cheek accommodated themselves so nicely to the plate that the lower apparatus was discarded.

An interesting osteoma was exhibited, which originated under the first inferior molar, left side. A filling had been inserted over a devitalized pulp, which abscessed the next day; the face was much swollen for two weeks. Gradually subsiding, and leaving a hardened lump in the region of the root, which increased in size for two years, when it had enlarged to the size of a nutmeg. Dentists and surgeons advised no interference; said it would "absorb." Dentist finally extracted the tooth; found no sign of abscess; pulp of tooth was atrophied. The tumor continued to enlarge for two years more, until it became the size and shape of a large walnut; face disfigured, and mal-occlusion of the teeth. All the bone was destroyed within three-eighths of an inch of lower ridge. The inferior dental vessels and nerves were atrophied from pressure. The operation consisted of laying open the gum tissue, by incision from the dens-sapientiæ to the cuspid—*never touching the face.* Torsion and hot water were used instead of ligating. Then denuding the gum, the tumor was well exposed, and with an elevator it was lifted from its place as a cobble-stone might be lifted from the bed of a stream. The sac in which it was lying was dissected away; packed with antiseptic gauze, and allowed to fill in by granulation. The operation occupied eight minutes. No deformity, and perfect cure.

Dr. Curtis operated before the members on a case evidently an osteoma, which had caused mal-occlusion of the teeth on one side, owing to the lengthening of the two last molars. After extracting the two teeth, he cut into the cancellous structure with a large bur on the dental engine, and removed the growth. It was his opinion that it might recur.

THE BANQUET.

The host of St. George's Hotel got up a very delightful and appetizing banquet. The menu card was very neat. A number of ladies were present. Dr. A. J. Parker presided with dignity and tact. There was more than enough to eat. As the State is Prohibition there was nothing stronger than coffee to drink. There were lots of good speeches, and "The Trotters" had lots of fun among themselves.

THE FINISH.

After the ever-vigilant treasurer, Dr. W. H. Munsell, had brought delinquents to time with their subscriptions, Dr. Parker announced that the election of officers would follow. The result was as follows: President, Dr. W. H. Wright, Brandon; 1st Vice-President, Dr. E. O. Blanchard, West Randolph; 2nd Vice-President, Dr. F. P. Mathers, Chester; Secretary, Dr. Thos. Mound, Rutland; Treasurer, Dr. W. H. Munsell, Wells River; Executive Committee, Drs. C. W. Staples, Lyndonville; J. A. Robinson, Morrisville; G. A. Wheeler, West Randolph; State Prosecutor, Dr. G. W. Hoffman, White River Junction.

There were two causes for regret; one was that all the members did not wait until the last event of the last day, the other was that we had to part.

Brandon was fixed upon as the next place of meeting.

THE EXAMINING BOARD.

The following officers of the Board were present:

Dr. J. L. Perkins, President, St. Johnsbury; Dr. R. M. Chase, Bethel; Dr. James Lewis, Burlington; Dr. Geo. O. Webster, St. Alban's; Dr. A. J. Parker, Bellow's Falls. The meeting began at 2 p. m. on March 21. There were seven applcants for license. An important feature was the practical examination. Each candidate was required to perform various operations in the mouth in presence of the Board, and the offices of Drs. Hoffman and Wheeler were used for the purpose, as well as the chairs in the Dental Exhibit. The advantage of this in economizing time was shown in the case of one candidate who quickly demonstrated his inability to prepare a simple cavity, and who withdrew from the ordeal. The following gentlemen were granted licenses to practice: D. J. Harrigan, Bellow's Falls; N. P. Bugbee, North Comfret; H. Burbridge, Windsor; Chas. Sutton, Norton Mills. Four candidates were rejected.

EXHIBITORS.

The following had very interesting exhibits of their goods, which were closed during the meetings of the Society: Hood & Reynolds, Boston; Boston Dental Manufacturing Co.; S. S. White Dental Manufacturing Co., Boston; A. J. Smith, Providence, R. I.; Gideon Sibley, Philadelphia, Pa.; Wilmington Dental Manufacturing Co.; B. L. Knapp & Co., Boston.

Whatever may now and then be said of the distracting attraction of the exhibits, they are an educational boon to the profession, especially to those who practice where there are no depots in their locality.

ALL SORTS.

The Electric Light as a Therapeutic Agent.—In the *Revista de Ciencias Medicas*, Dr. Estanislao von Stein reports a number of neurasthenic, hysterical, and rheumatic affections successfully treated by illuminating the surfaces with the electric light. His apparatus—"Fotoforo"—consists of an incandescent light of twelve volts, supplied with an infundibuliform reflector and a handle. Illuminating a painful joint or nerve, for two to five minutes, has yielded him surprising results. The alterations, especially of the nerves, which take place are probably of a molecular character.

Spirit Lamp Wicks.—In our opinion the wicks usually sold for spirit lamps are too tightly packed in their web covering. The spirit does not pass through as quickly as required, hence, not only spirit but wick burns, causing a flame bad in quality and quantity, a waste of wick, and the annoyance more often than needful of its being too short and having to be replaced just when the lamp is most urgently wanted. Remedy:—Pull two or three strands out of the wick before using. Obvious, isn't it? Still, we didn't see it till told, and perhaps others may be equally blind.—*Dental Record.*

Nerve Canal Drills.—Mr. A. P. Cater, of Stafford, finds that by drawing the temper of nerve-canal drills and using them soft, the liability of their breaking in the canal is considerably lessened. To softem them he simply holds the stem in the flame of a spirit lamp until it is heated to a cherry red, taking care to heat the head or cutting portion as little as possible. This makes the flexible stem soft enough for it to adapt itself to the curve of a canal with but little danger of breaking. Operators who are large users of these drills will no doubt appreciate this hint.—*Ash's Quarterly.*

Cork Wedges for Separating Teeth.—Dr. Denham, of Santiago, states that he fines cork an excellent material for gradually separating teeth; it gives less pain than anything with which he is acquainted, causes little or no inflammation, and, consequently, patients seldom neglect to renew the wedges, as instructed, between one visit and another. Dr. Denham recommends strips about three-eights of an inch wide, tapering from a knife-edge to about three-sixteenths of an inch, as the most convenient for ready adaptation to the actual size required for any case under treatment. It is perhaps needless to add that the cork should be fine and dense in quality.—*Ash's Quarterly.*

Rubber Shield for Handpiece Nose.—Dr. Denham, of Santiago, finds a feeding bottle teat the best shield that he has ever used for protecting the inner part of a hand-piece, and he claims that it possesses an advantage over all others in that it is not readily lost, and can be drawn over the nose on to the handpiece while the engine bits are being changed; there is thus no trouble of pushing the shank through the hole in the rubber as is the case when an india-rubber washer or cup is used for the purpose. The teat will lie quite flat on the nose of the hand-piece if the rim at the open end be cut off.—*Ash's Quarterly.*

QUESTION—A correspondent asks: *What is the best material to mix with plaster of Paris in making a mould in order to cast a Babbit metal die without bubbles?*

ANS.—Pumice stone, or finely pulverized silex, 3 or 4 parts to one of plaster, are probably the best materials for this purpose; although plaster, however used, makes but a poor matrix in which to cast metals, and must be *thoroughly dried* and warmed before casting.

Chase's prepared moulding sand makes the best all-round matrix for dental castings. GRANT MITCHELL, D.D.S., Canton, O.

Barker, (D. W.) on Finishing Strips.—I have brought with me some of the material I am in the habit of using for finishing off the approximal surfaces of amalgam fillings when they are first inserted. It is very thin copper; in fact, it is so very thin that to give it additional strength I double it. I have prepared a quantity of the strips as I use them, and those who wish may take one or two, to try them. After slight use, these strips become covered with little deposits of amalgam and mercury, and are soon useless; but they give a very beautiful finish to the approximal surface of amalgam fillings. This material is sold under the name of copper tinsel. It has upon it a sort of gelatin mixture, with coloring matter in it which can be readily removed with boiling water, and a bright surface is left. It can be obtained at almost any hardware store.—*Cosmos.*

Minshall (F. W.) on the Question of Recreation.—This is a most potent element in the life of a dentist, for while skill at golf, tennis, or cricket will not teach us how to build up a gold contour filling, and well developed muscles will not suffice to restore the worn out bur, still the maintenance of health will tend to reduce the cruelty of hesitancy in painful operations. Furthermore, the possession of a "hobby" say for painting and drawing, modelling, wood-carving, etching or engraving, will be found of much value; we may derive considerable satisfaction and enjoyment therefrom, and at the same time be attaining that dexterity and training of the hand which it is so essential we should acquire and which can never be so well acquired as in early life. Some little portion of our spare time devoted to these latter pursuits would doubtless have a good effect in rendering impossible and unknown those fearfully and wonderfully clumsy and unnecessary ugly dentures which are a disgrace to 19th century dentistry.—*Extract. Brit. Jour.*

Sumner (F. J.) on Treatment of Gum Irritation.—When the gum shows signs of irritation, always explore for tartar, which acts as a poisonous irritant.

After removing all traces of tartar and prescribing the indicated remedy and local wash, I insist on the patient, who has been suffering from calcic or other inflammation, using massage, and have observed rapid progress towards a normal condition when it was faithfully carried out in conjunction with the mouth-wash.

Pressure, gentle at first, rubbing the gums and beating them with the ball of the finger, coaxing the gums around the neck of the tooth, and using a brush with up and down (twirling) movement.

When there is hypertrophy of the interproximal gingivæ, excise with gum-scissors and pack the space with cotton charged with a paste containing tannin, and prescribe hamamelis locally as a wash in combination with massage.—*Extract Dental Practitioner.*

Dental Scientific Work.—" What we need, then, in dentistry is not more of the so-called practical, by which is meant the strictly empirical, but more of the essentially scientific, which is the only truly practical; less of mysticism and rule of thumb, and more of the rational and the exact. * * *

" It is not given to all men to be scientific investigators in the broad sense, but it is, after all, largely a question of degree, for every one is, or should be, capable of observation, and the ability to correctly interpret and report the result of such observation is simply a question of practice and training.

" To properly observe and interpret selected phenomena is the initial step in scientific investigation, and it is the ability to correctly reason and generalize upon the results so obtained which constitutes the scientific method of thought. It cannot be successfully gainsaid that whatever of substantial progress has been made in dentistry has been achieved through applications of the scientific method to the study of its phenomena, due regard being had for what in reality constitutes the scientific method.

The period of its growth in which empiricism and reasoning of the phrenological order held exclusive sway in dentistry has passed by, and henceforth a due respect for the uncompromising requirements of scientific exactitude must govern its procedures, rather than faith in the *ipse dixit* of self-constituted authorities or in the plausible claims of the nostrum-vender.—*Extract Ed. Cosmos.*

Van Woert (F. T.) on the Use of Bonwill Mallet and Chisel for Removing Deposits from the Teeth.—Some weeks ago, while trying to manage a difficult case of pyorrhea alveolaris, I was seriously bothered in the removal of the deposits, in fact was about to give it up, when I was inspired with the thought that the mallet and chisel might help me out of the scrape, and upon trial found very satisfactory results. In thinking the matter over later, I became convinced that the Bonwill mallet was just the thing for the purpose. After a trial I am thoroughly converted to the belief that this instrument, or one of the same principle, is the proper thing to remove these deposits, inasmuch as with a narrow chisel scaler you can chip off all the calcified matter on the roots without encroaching upon the peridental membrane or alveoli. This is in accord with my theory that these parts should not be disturbed. The results have proven so satisfactory that I cannot refrain from writing you, that the profession at large may profit by the same. I beg as well to add the formula for a lotion which has given me the most pleasing results in the treatment of this disease:

℞—Lysol, f℥ ij;
Tinct. capsicum, gtt. xv;
Tinct. iodin, fʒ i.

Sig.—Five drops in one-half glass of water used as a wash, in cleansing the teeth with a brush.—*Cosmos.*

Truman (Jas.) on Making Gold Fillings for Children from Eleven to Sixteen Years of Age.—I am almost prepared to assert that it is malpractice for any individual to place gold fillings in children's teeth from eleven to sixteen years of age. I know that it is a strong statement, and perhaps I should qualify it to some extent by the assertion that some teeth will bear it; but we cannot reason upon exceptional teeth. The teeth that are sufficiently dense at that age to bear such fillings are extremely rare.

What is the philosophy of this? You all comprehend the fact that a tooth at this age of life is not fully developed. That all the tubuli, histologically speaking, are very much larger than they will be at a later period; and if you place a good conductor in the teeth, as gold, irritation will be produced, and the irritation upon the peripheral ends of the tubes will be carried to the pulp, producing inflammation and final destruction. If this be the case (and I cannot see that it is possible for any one to deny it, knowing the minute anatomy of the tooth-structure), are we justified in ever using gold in that class of teeth? I have, therefore, declined to use gold up to the twentieth year, except in rare cases, notwithstanding the frequent objection of parents. If parents are permitted to dictate to us, we have mistaken our calling. I have had some such difficulty, but I always say, You must accept my word in the matter or it would be better to take the child elsewhere. This I regard as the only course to pursue in these cases until greater density is secured. The expression that "whatever tooth was worth filling was worth filling with gold" has lost its force, and we are coming down to a philosophical method of treating teeth,—not alone those of children, but all teeth.—*International.*

Chemical Researches on the Mineral Matter of Bone and Teeth.—Dr. S. Gabriel (*Ztschr. f. physiol. Chem.*) expresses the composition and properties of the ash of bone and teeth by the following general formula: $Ca_3(PO_4)_2 + Ca_5HP_3O_{13} + 2H_2O$, in which from two to three per cent. of calcium is replaced by magnesium, potassium, and sodium, and from four to six per cent. of phosphoric acid is replaced by carbonic acid, chlorine, and fluorine. The quantity of chlorine amounts to only a few hundredths of one per cent., except in the enamel of the teeth, which contains a relatively larger quantity (0·21 per cent.). Fluorine is a constituent of both bone and teeth. The quantity does not usually exceed 0·05 per cent. of the ash, rarely amounting to 0·1 per cent. In direct contrast to the other solid tissues of the body, bone and teeth contain more sodium than potassium. While the quantities of calcium and phosphoric acid vary only inconsiderably, yet the magnesium and carbonic acid vary inversely with these, so that the sums of the two bases and of the two acids are constant. The distinctive character of the ash of particular bones depends on the variation in the amount of calcium and phosphoric acid replaced, and also on the nature of the replacing radicles. The difference that exists between bone ash and tooth ash is not greater than the difference which has been observed in the ash of different bones. In enamel there is less, and in the body of the tooth relatively more, calcium replaced by magnesium than in bone ash.

As the formula indicates, the phosphate is basic in character and is probably a combination of a neutral and a basic phosphate. The relative valence of the acid and basic radicles is as 15 : 16. Water is present in two combinations—water of crystallization driven off at from 300° to 350° C., and water in chemical combination, driven off at white heat when the substance is mixed with silicic acid.

Davenport (S. E.) on A Method of Securing Loosened Incisors.—Dentists are occasionally called upon to treat mouths in which, while there is no particular tendency towards pyorrhea alveolaris, certain teeth, usually the lower incisors, will be found very loose, the bony process much absorbed, and the gum thickened and spongy, with perhaps a slight exudation of pus.

This condition in such mouths is usually of local origin, caused by the encroachment of salivary calculus, the other teeth in the mouth being ordinarily in very good condition and of unquestioned longevity, and it always seems sad to be obliged to advise the extraction of these loose teeth, particularly as it is difficult to replace them with artificial substitutes which shall be both comfortable and natural.

On one occasion the temptation to attempt the retention of such teeth was increased by the pleadings of the patient, a gentleman about seventy years of age, in good health and of good physique, who had more than the usual horror of artificial teeth, assuring me that he would bear any fatigue, put up with any discomfort if I would but save his natural teeth.

The teeth had as usual elongated considerably, and when the jaws were closed, the four inferior incisors would sometimes shut inside and sometimes outside the upper ones, though the roots were long and still had quite an attachment to the gum.

The first step was to grind down the elongated teeth with corundum stones until they would clear the upper ones when closed. An impression was taken, and upon the dies obtained a cap of pure gold, about number 30, was swaged to fit the upper two-thirds of the lingual surfaces of the six teeth, and extending over the tops of the teeth to a point, perhaps, one-fourth of the distance down the labial surface. This cap, being carefully fitted, was cemented in place June, 1891, with zinc phosphate, and the edges of the cap burnished to the teeth wherever possible. The teeth were then thoroughly scaled and cleaned.

This pure gold cap has become loose, I think, twice since it was first put on, but it is easily readjusted and has in every way fulfilled my expectations, for the teeth are preserved, and, I think, can be indefinitely.

Such a contrivance would be unsightly in a lady's mouth, but this gentleman having a heavy moustache and beard, exhibits the golden line only when the joke is a particularly good one.—*Extract International.*

Pedley (R. D.) on Persistent Neuralgia after the Extraction of a Tooth.—Mary S——, aged 29, sought advice for intolerable pain in the lower jaw.

She went to a chemist in consequence of toothache in a canine tooth in the lower jaw on the left side. The tooth was removed with considerable difficulty, and the patient was relieved. Three days after acute pain came on. The patient consulted a dental surgeon who lanced the gum and removed some splinters of bone: and told her to return in a week. The pain continued night and day, so that another visit was paid to the dentist and he removed the lateral on one side and bicuspid on the other side of the canine socket. The patient could not say if these teeth were carious. No relief followed from this operation, and she has suffered night and day since.

The patient was a thick-set, healthy looking girl, evidently in much distress from pain and loss of sleep, complaining of constant pain where the tooth was taken out. The pain is "throbbing and shooting" worse at times, starting from socket of canine and going round to the ear on the same side, often "like knives digging in." The pain is worse at night when she is in bed.

On examination, the mouth was healthy, patient had lost many teeth, only three remaining in the lower jaw, eight in the upper jaw. On the left side about the position of the lower canine, the gum was much inflamed and swollen, showing an unhealthy granulating surface, with small spicules of alveolar plate visible here and there. On probing, an acutely painful spot was felt deep down in the canine socket, and apparently no portion of a tooth was there. Much probing caused agonizing pain. Nitrous oxide was administered and a rose-headed drill was introduced and run well down to the bottom of the socket, then carefully removed; $\frac{1}{2}$ gr. opium was ordered to be taken each night.

Six days later the girl returned and said she was now quite well.

REMARKS.—Persistent pain after tooth extraction is by no means rare, and in the majority of cases arises from one of two causes. A small portion of a tooth may be left in the socket. An unhealthy condition of the wound may be induced by poisoning from dirty instruments, or from various causes of ill health. Both these causes were eliminated after careful treatment. From the history and the success of the subsequent treatment, I conclude that the persistent neuralgia was due to a traumatic neuroma or an enlargement of nerve at the point of separation from the tooth. Such cases are rare after tooth extraction; but are not unfrequently found in the stumps of limbs after amputation. The enlargement is bulbous, and microscopically is found to consist of fibrous tissue and nerve fibre. This gives rise to various nervous symptoms, pain; and numbness if sensory fibres are affected. Muscular twitchings or even epileptiform convulsions, result from irritation of motor fibres. There is only one form of treatment advised, viz., amputation of the neuroma. In the case above mentioned a rose-headed drill answered the same purpose.—*Extract Brit. Jour.*

Calmel (A.) on Epulis of theLower Maxilla.—Madlle. X., 19 years of age, presented herself in the course of last September at the clinic ot the École Odontechnique; she came too seek advice respecting a tumor, which had its seat in the mouth. This tumor, situated upon the free edge of the lower maxilla, in the place of the absent canine on the right side, had been present for years. Extirpated by means of the bistoury eight or ten months ago, it grew again, and at this moment was of the size of a thick hazelnut. On examination, it was found to be an epulis of a fibrous nature, implanted into the maxilla by a pretty voluminous pedicle. It was decided to remove it. A section was made at the pedicle by means of the bistoury: the portion of the pedicle remaining was profoundly cauterized, as well as the neighboring parts. A severe hemorrhage ensued, and the application of the thermo-cautery not arresting it, the wound was plugged. On the following day the patient was re-examined, when not a trace of hemorrhage remained; the wound was then dressed, and rinsing of the mouth several times a day with a solution of permanganate of potash (3 in 1000) was prescribed. The cicatrization proceeded rapidly. The operation was perfectly successful, but were the results entirely satisfactory? The tumor had re-appeared after the first operation; would it perhaps make its appearance again? The cauterization, although profoundly done, did not seem complete, and one would not be surprised if in eight or ten months the tumor grew again. In fact, whether the epulis be broadly implanted, or attached by a narrow pedicle, the points of the attachment are no less profound; the roots of the tumor are found in the fibrous submucous tissue, or in the soft tissue, which contains the Haversian canals of the maxilla; this was proved by the mucous envelope surrounding the epulis by the actual cautery? All the soft tissues containing or surrounding the tumor will have been destroyed; but let the cauterization be performed ever so deeply, its action will stop at the bone, which at the most would only have been burnt superficially. Hence the result of the operation would have been practically *nil*. In fact, the roots of the tumor remaning, the tumor strongly re-appears sooner or later; there will therefore be only a temporary cure.

The only rational way of curing epulis effectually is to scrape the maxilla. After having removed the tumor with the bistoury, the bone at the spot where the epulis had been situated was cleared with the gouge, in such a manner as to remove all the roots which might exist in the osseous tissue; the operation terminating with cauterization by the aid of the thermo-cautery. This mode of operating—the only one for achieving satisfactory results—has been known for a long time; nevertheless, a number of practitioners, ignoring even the igneous method, which may succeed sometimes, content themselves simply with the excision of the tumor by means of the bistoury.—*Translated from Revue Odontologique.*

Taggert (W. H.) on A Practical Case of Removable Bridge-work.—The mouth as it came to me, showed the loss of the teeth anterior to the bicuspids. You will notice it is a mouth which needs considerable restoration of contour. I succeeded in doing this in the following manner: After the pulps were destroyed and the roots filled (which I think is quite necessary on account of the amount of cutting required to make the crowns absolutely parallel), I put on flat-topped crowns. The bicuspid has the offset in it to allow the telescoping crown which goes over it to have a porcelain face, as this cuspid, you will notice, stands well forward, and would not be artistic if covered by a gold crown. I preferred fixing *this* bicuspid in *this* way to cutting it off and putting a band with a tube in the root and a pin in the porcelain face, as I think it decidedly stronger. After these flat-topped crowns were made, and before they were set to place, I made a mark at the gum line to each one, so as to know just how far the telescoping crown could go without impinging on the gum. Over these flat-topped crowns (out of the mouth) I made other flat crowns to telescope, so as to come in contact in all their parts, and thus prevent any movement between the two crowns. Cusps were then struck up and articulated in the mouth, and the contour of the telescoping crowns made with solder, and the porcelain face put on the bicuspid. An impression was then taken, and a gold plate of two thicknesses of 30 gauge (soldered together to give stiffness) was struck up and soldered to the telescoping crowns. I then placed the flat crowns for the roots in their telescopes, and cemented them to the roots as though it was a permanent bridge, and allowed it to remain until the next day, when the removable part was removed, and then came the satisfaction of having attended *minutely* to *every* detail, as the bridge went on and off rather tightly but easily, showing that all parts were parallel.

In the restoration of the features I wished to get the effect of continuous-gum work, and still allow for making repairs on the porcelain in case of accident, without the danger of altering the accurate fit of the gold work. An impression was taken of the removable part, and a platinum plate was struck up, an exact duplicate of the gold plate. Over the cuspids and at the heels of this platinum plate extra pieces of big platinum-wire were soldered to give thickness enough of metal to allow screws to be put in.

Continuous-gum teeth were then arranged and baked on the platinum, and holes drilled and tapped and the screws put in, and the parts were ready to assemble. At first, I put two parts together with melted sulfur, and screwed together while hot. The wisdom of having made it possible to easily take the porcelain teeth from the bridge proper was soon shown. While the patient had every privilege of offering suggestions during the arrangement and selection of the teeth, and finally expressed satisfaction, yet when they were finished and had been worn a few days, she decided that they were a little too light and a shade too dark and a little too short and a trifle too long, and that when she was sixteen years old she had such and such teeth; and as I had agreed to satisfy her, I had no trouble in removing and rebaking new teeth on the platinum base. She also spoke of having a taste of sulfur in her mouth, and for that reason I united the parts with oxyphosphate cement and screwed together as before.—*Cosmos.*

NEW PUBLICATIONS.

THE DISCOVERY OF MODERN ANESTHESIA. By Dr. L. W. Nevius, New York. Published by Geo. W. Nevius, Cooper Institute, New York, 1894. Price, $1.00.

The author says: "In this work I have endeavored to briefly compile in one small volume undeniable facts and figures, showing when and where each of the four noted men were born, where they received their professional education, where each of the four aspirants performed their first operations upon the basis of which they claimed the honor of being the original discoverer, etc. * * * I do not claim that I have discovered anything new on the subject, but do claim that this is the first and only impartial, unprejudiced and fully illustrated publication in which are given all the circumstances, dates and facts as above stated. I have endeavored to make this story not only of great interest and value to physicians and dentists, but a very interesting historical tale in which a patient might easily become interested, and thus not only pass away their waiting moments in an office pleasantly but with profit to themselves as well." While containing nothing particularly new it is an interesting work for those who desire a treatise on this subject.

The author has published also a picture 19x24, "Souvenir of the Discovesy of Anesthesia," price $1.00 or both book and picture for $1.50.

A LIST OF REGISTERED DENTISTS OF OHIO. Arranged and published by the Ohio State Board of Dental Examiners, 1894.

This is a complete list of registered dentists in Ohio, giving each practitioner's name, address, age at time of registration, and credentials. Aside from these the dental law is printed in full. It is printed on heavy calendered paper and is, typographically, a model publication. Great credit is due the secretary, Dr. Grant Mitchell, for the thoroughness shown in its compilation, and to the Repository Printing Company, of Canton, for its perfect press work and make-up.

POCKET DENTAL REGISTER, Account Book and Bill Book combined, designed and published by Dr. W. H. Steele, Forest City, Ia.

Useful, neat and convenient. It is furnished with fine Russia leather cover, and so arranged that new fillers can be used when necessary. It should be seen to be appreciated.

Dr. Steele has also had a four page illustrated paper published, giving his investigations and experience for the past fifteen years, with combination alloy-gold fillings and crowns. A copy of this article will be sent to all who address him with enclosed stamp.

A PARTIAL SYSTEM OF DENTAL NOMENCLATURE, adopted by the Faculty of the Northwestern University Dental School, Chicago, 1894.

The nomenclature given follows the same lines as those given in the report of the Committee on Nomenclature at the World's Columbian Dental Congress, 1893. We are glad to see a revised nomenclature adopted and hope that other colleges will follow suit.

THE BUSY DENTIST is the name of a new dental journal just started at Atlanta, Ga. The first issue, April, has just appeared and is very creditable in appearance and make up. It is edited by T. P. Hinman, D.D.S., and published by the Mutual Printing Company. The publication will be issued monthly. We wish the projectors success in their undertaking.

A Spanish monthly of dental literature, *La Revista Dental Americana*, is now issued at Philadelphia It is intended for circulation principally in Latin-America, Portugal, Spain, and her Colonies. The idea is to give to these countries, through the medium of the Spanish language, the latest thought of the profession of the United States. R. W. Edwards, D.D.S., is the proprietor and publisher.

BRIEFS.

— Dr. C. E. Kells uses China silk in which to squeeze out mercury from amalgam. It leaves no fibers adhering to the material as from the use of chamois skin.

— For removing broken drills Dr. Van Woert uses simple coils of wire, on the end of which is a tube of thin copper, and filled with a cement of shellac and wax, that by slightly warming and passing into the root catches the end of the drill and takes it out nicely.

— Dr. Pirtle, of Louisville, believes the loosening of teeth on a plate is from wax left on the pins. He says: To obviate this trouble, I use chloroform to wash the wax off the pins. It is applied either with a pledget of cotton or a camel's hair brush.

I also stop the outsides of the teeth before investing, to be sure there is no wax on them that is not wanted, thus preventing their displacement in the flask.—*Items.*

— When it comes to putting pellets of hard and dry amalgam into an upper tooth, I put a piece of cut spunk, say about one-half inch square, below the cavity, and hold it in place with the mirror. The pellet of amalgam is then placed upon it directly at the orifice of the cavity, from which position it is easily forced into place with the flat blade, and the burnishing process proceeded with.

So, also, in approximal cavities, spunk can be of the greatest assistance in getting the material into the cavity.—*C. E. Kells.*

— Dr. Baker uses gold spurs for the retention of teeth moved for correcting an irregularity. The gold spurs project from the cavity in the tooth about one-sixteenth of an inch, and rest on an adjacent tooth. They are made by cutting a strip from a piece of thick plate, and putting it in a port-polisher and working it down to the desired size. To insert the spur, he drills a cavity in the tooth, if there is not one already, fills the cavity with cement, then inserts the pin in cement. These pins will sometimes last a year or two, and there is no inconvenience from their use.

— "SILVINITE."—Judging from the account given of silvinite in *Invention*, this metal, which is really an alloy of aluminum, would appear likely to become of almost universal use in various manufactures. It can be rolled into sheets almost 5-10,000 of an inch in thickness, drawn into tubes, or spun into wire as fine as a spider's web. A mixture of 25 parts silvinite and 75 parts gold is said to produce a rich tint, while a small per centage of silver considerably hardens and strengthens it. In malleability it is exceeded only by gold and silver, and in point of ductility it is seventh among the metals.—*Jour. Brit. Asso.*

— I am specially pleased to report, so far as my experience goes, that we have in trichloracetic acid an unequalled remedy for apthous stomatitis or canker sore mouth. These mucous patches are often quite painful, and annoying to both patient and operator. Ordinarily, one or two applications will be sufficient. In extensive cases, patients may be given a small bottle and apply it for themselves. It seems to me that we can do the medical profession no better service than to call their attention to this remedy as a "specific" in this class of lesions. One application is sufficient to stop further progress, if used on first appearance of the lesion. I say this with considerable confidence, because I have succeeded where the physician has failed.—*J. A. Dunn, Cosmos.*

SOCIETIES.

MICHIGAN STATE DENTAL ASSOCIATION.

THE annual meeting of the Michigan State Dental Society will be held at Ann Arbor, Mich., June 6, 7, 8, 1894. It is desired that there be a good attendance and all members of the profession are cordially invited to assist in making the meeting an exceptionally good one.

J. WARD HOUSE, *Sec'y.*

NORTHERN OHIO DENTAL SOCIETY MEETING.

The coming meeting of The Northern Ohio Dental Association, at Put-in-Bay, June 19 to 21, promises to be the best in the history of the society.

In addition to the regular, excellent program, the "Anesthetic Quartet," of Canton, Ohio, composed of Drs. Will. L. Webster, Grant Mitchell, Will. R. Reed, and Louis J. Blake, will furnish music for the sessions.

This quartet is exciting a good deal of admiration in the town of its birth, and it is safe to predict that their share of the program will be a delicious innovation.

Be sure and arrange to attend this meeting.

MIDWINTER FAIR DENTAL CONGRESS.

The Midwinter Fair Dental Congress will be held at San Francisco, Cal., June next, from the 11th to 15th inclusive.

All reputable legal dentists of the nine states and territories of the Pacific slope, together with those east of the Rockies, who wish to join with us, are expected and urgently requested to attend this meeting, bring with them any and everything that may be of interest to the profession.

Come prepared to give rather than to take.

Interesting papers and clinics are promised from leading men both east and west.

A meeting is anticipated that will be second only to that held at Chicago last August.

The work is being carried forward by the following officers and chairmen of committees:

President, Luther A. Teague, 10 Geary street, S. F.; *Vice Presidents*, 139 Post street, S. F., and J. A. W. Lundborg, 210 Geary street, S. F.; *Treasurer*, W. A. Knowles, 118 Grant ave., S. F.; *Secretary*, W. Z. King, 1001 Valencia street, S. F.; *Ass't Secretary*, C. W. Hibbard, 202 Stockton street, S. F.; *Cor. Sec'y*, C. E. Post, 14 Grand ave., S. F.

CHAIRMEN OF COMMITTEES.—*Executive*, S. H. Roberts, 120 Mc Allister st.; *Finance*, Harry P. Crocker, Crocker Building; *Programme*, Walter F. Lewis, 462½ 13th st., Oakland; *Editorial*, J. D. Hodgen, 1005 Sutter st.; *Membership*, T. N. Iglehart, 713 713 Sutter st.; *Invitation*, L. L. Dunbar, 500 Sutter st.; *Reception*, J. A. W. Lundborg, 219 Geary st.; *Local Arrangement*, F. C. Pague, 819 Market st.; *Dental Club*, W. J. Younger, 300 Stockton st.; *Advisory*, Thomas Morffew, 702 Market st.; *Association Day*, A. F. Merriam, Jr., 1003½ Broadway, Oakland; *Publication*, F. Teague, 21 Powell st.; *Transportation*, R. H. Cool, 1125 Broadway, Oakland.

MISSISSIPPI STATE BOARD OF DENTAL EXAMINERS.

Editor Ohio Dental Journal:

At the annual meeting of the Mississippi State Board of Dental Examiners, Apr. 3, 4, 5, there were thirteen applicants, the successful candidates being J. R. Moore, W. C. Davis, W. O. Talbert, A. B. Kelly, A. T. Pierce and J. E. Johnson.

The system of the Illinois State Board, as recently published in the *Dental Review*, was adopted and worked very acceptably. No oral examinations were held, however, additional lists of questions being prepared on Oral Surgery, Prosthesis and Orthodontia. Each applicant who passed the written examination successfully was also required to clinic—the first time that this has ever been attempted by the Mississippi Board. To secure the removal from the Board of A. H. Hilzim, a man who persisted in advertising contrary to the Code of Ethics (and who for this reason is no longer a member of the State Association), but who refused to resign from the Board, and whom the Governor declined to remove—but who consented to resign with the Board in a body—the entire Board resigned, each one pledging himself not to accept a re-appointment from the present Governor. This step was thought preferable to allowing a man setting such an evil example to younger members of the profession, to occupy such a prominent position as that of member of the Board of Dental Examiners.

W. E. Walker, *Pres't*,
G. B. Clement, *Sec'y*,
Bay St. Louis, Miss.

THE MISSISSIPPI VALLEY DENTAL ASSOCIATION.

The forty-ninth annual meeting of the Mississippi Valley Association of Dental Surgeons convened in the lecture room of the Ohio Dental College, pursuant to the following circular sent to the members of the Association:

Cincinnati, O., March 6, 1894.

Dear Doctor: — For several years it has been a question among the members of the Mississippi Valley Association of Dental Surgeons, "Has the society outlived its usefulness?" There was a time when this society accomplished the greatest amount of good, but conditions have changed. City, District, State, National and International organizations have occupied the field. A society representing the Mississippi Valley does not seem a necessity. Men of talent have all their spare time taken up attending to the other organizations mentioned. Last year there was no meeting on account of the Columbian Dental Congress. This year there is, as yet, very little prospect of a successful meeting. The officers do not feel that they care to take the responsibility upon themselves of saying that the society shall or shall not be abandoned. Therefore, let this be notice to all members of The Mississippi Valley Dental Society, that there will be a meeting of this society, for the purpose of deciding upon the continuance or abandonment of the Association.

To be held in the Ohio Dental College building on the 28th day of March, at 2 P. M., 1894.

Dr. O. N. Heise, *President*,
82 Garfield Place.
Dr. J. R. Callahan,
Chairman Ex. Com.
Dr. H. T. Smith, *Secretary*,
128 Garfield Place.

Pres. Dr. O. N. Heise called the meeting to order, and after reading the above circular the following resolution, offered by Dr. J. Taft, was adopted unanimously:

"That it be considered the sense of this meeting that the Mississippi Valley Association of Dental Surgeons be continued."

Drs. J. S. Taylor and Betty, Membership Committee.

The following gentlemen were unanimously elected to membership: W. H. Gillette, H. F. Vandervoort, W. B. Fahnestock, and W. S. Locke, all of Cincinnati.

On motion of Dr. Molyneaux, the annual dues for the present year are to be omitted and new members shall pay only the initiation fee.

On motion the Treasurer was authorized to pay all current bills.

On motion of Dr. Callahan, the date for the next meeting shall be the day following the date of the Commencement of the Ohio Dental College, and shall be held in Cincinnati, and it shall be considered the Semi-Centennial Meeting of the Association.

The following members were present: Drs. J. R. Callahan, J. Taft, C. M. Wright, M. H. Fletcher, G. Molyneaux, A. F. Emminger, Jas. Leslie, F. A. Hunter, H. C. Matlack, W. Taft, E. G. Betty, J. I. Taylor, Chas. Welch, H. A. Smith, O. N. Heise, H. T. Smith, W. B. Fahnestock, H. F. Vandervoort, W. H. Gillette, W. S. Locke, J. B. Dillon, W. O. Hulick and A. G. Rose.

The following officers were elected:

President, Dr. J. Taft, of Cincinnati, O.

1st Vice President, Dr. W. B. Ames, of Chicago, Ill.

2d Vice-President, Dr. A. F. Emminger, of Columbus, O.

Treasurer, Dr. F. A. Hunter, of Cincinnati, O.

Corresponding Secretary, Dr. H. C. Matlack, of Cincinnati, O.

Recording Secretary, Dr. H. T. Smith, of Cincinnati, O.

Executive Committee—Drs. J. R. Callahan, Cincinnati, O.; M. H. Fletcher, Cincinnati, O.; and L. E. Custer, Dayton, O.

COMMENCEMENTS.

Kansas City Dental College, Kansas City, Mo. Graduates 8; Matriculates 113.

Ohio College Dental Surgery, Cincinnati, Ohio. Graduates 34; Matriculates 151.

Medal for best general examination awarded to W. C. Elifritz, Ohio.

Medal for operative attainments, T. J. Way, Ohio.

Medal for prosthetic attainments, J. A. Auld, Michigan.

Cincinnati College of Dental Surgery, Cincinnati, Ohio. Graduates 5; Matriculates 18.

American College of Dental Surgery, Chicago, Ill. Graduates 43.

COLLEGE PRIZE.

Gold Medal—	F. N. Brown

SENIOR CLASS.

Gold Medal—*For highest grade of gold fillings*	F. E. Roach
Gold Medal—*For best artificial substitute*	C. E. Neptune
Gold Medal—*For best collection of mechanical work*	D. E. Smith

Gold Medal—*For best porcelain inlaid fillings*	ALICE MENGES
Silver Medal—*For highest grade of gold fillings*	FRANK SKINNER
Silver Medal—*For best artificial substitute*	J. H. HARTINGER
Silver Medal—*For best collection of mechanical work*	A. P. VOORHIES
Gold Headed Cane—*Presented by Prof. Cigrand for best removable bridge*	W. E. CARR

FRESHMAN CLASS.

Bronze Medal—*For highest grade of gold fillings*	H. H. MAYNARD
Bronze Medal—*For best artificial substitute*	J. B. HOWELL
Bronze Medal—*For best collection of mechanical work*	L. H. CORNELL

UNIVERSITY OF MARYLAND Dental Department, session 1893-'94: graduates 34, matriculates 145; gold medal prize, R. C. Walden, Va.; honorary mention, H. W. March, Ohio.

AT the annual meeting of the Chicago Dental Society the following officers were elected for the ensuing year: J. H. Woolley, Pres.; C. E. Bentley, 1st Vice-Pres.; D. M. Gallie, 2d Vice-Pres.; A. H. Peck, Rec. Sec.; H. A. Costner, Cor. Sec.; E. D. Swain, Treas.; J. J. Whaley, Librarian; J. N. Crouse, Director.

H. A. COSTNER, *Cor. Sec.*

RESOLUTIONS ON THE DEATH OF W. H. EAMES.

At the regular meeting of the Chicago Dental Society, April 3d, 1894, the following resolutions upon the death of Prof. W. H. Eames, of St. Louis, were unanimously adopted:

WHEREAS, It has come to the knowledge of the members of the C. D. S. that the dental profession is called to mourn the loss of one of its most distinguished and honored members, therefore

Be it Resolved, That in the decease of Prof. W. H. Eames, of St. Louis, the world has lost one of its foremost educators, his family a devoted husband and father, and the profession a sincere earnest and useful devotee. It is fitting that this Society should pay its tribute of respect to one who has so long and honorably filled these positions before the world; and we mourn his death as a personal loss to each and all of us.

Be it further Resolved, That a copy of these lines be transmitted to the family, and a further copy be sent to the dental journals for publication.

A. W. Harlan,
Truman W. Brophy,
Edgar D. Swain,
Committee.

RESOLUTIONS ON THE DEATH OF A. N. JACKSON.

At the 18th annual meeting of the Vermont State Dental Society, held at White River Junction, March 21–23, the following resolutions were adopted on the death of Dr. A. N. Jackson:

Whereas, Our brother Dr. A. N. Jackson, of Hardwick, has been removed from our midst by death.

Resolved, That we, the members of the Vermont State Dental Society, extend to his family our heartfelt sympathy in their affliction.

Resolved, That a copy of these resolutions be sent to his family and to the dental journals for publication.

Geo. F. Cheney,
J. A. Robinson,
Chas. F. Meacham,
Committee.

OUR AFTERMATH.

The *Revue International D' Odontologie* and *L' Odontologie*, Paris, have consolidated and the journal is now the official organ of the Association General of the Dentists of France, of the Dental school, Paris, and of the Society of Odontologie of Paris. Dr. Paul Dubois is Editor in Chief.

A Deserved Degree.—Dr. W. D. Miller has recently had conferred upon him by the University of Berlin the additional honor of appointment as "Extraordinary Professor of Medicine," an honor rarely bestowed upon foreigners, and not previously held by any professor of dentistry in Germany. This announcement will be a source of gratification to the friends of Dr. Miller, not only because it is a fitting recognition of his scientific ability, but as dentists we must take a just pride in the distinction which is thus conferred upon so worthy a member of our calling.

Another Degree.—The University of Michigan, at the suggestion of the faculty of the dental department, has established a new degree—that of Doctor of Dental Science—as a kind of post graduate honor, to be conferred upon those regular graduates who shall spend yet another year in certain special studies. We cannot but think this a great mistake. There are too many degrees now. Every additional one detracts from the value of the D. D. S., which we are endeavoring to make in dentistry what the M. D. is in medicine. If all kinds of side degrees were to be allowed, how long would that of Doctor of Medicine maintain its respectability? If every college is to have a special degree of its own, we may bid farewell to all idea of a united profession that shall command honor at the hands of the world. When Harvard organized its dental department it took the lead in an important movement, but when it established a separate degree it did a great deal to neutralize it.—*Practitioner.*

DIED.—CORYDON L. FORD, M. D., of Ann Arbor, Mich., April 14. Dr. Ford's death was the result of an attack of apoplexy which he suffered on his way home from the medical building. He was in his 81st year, having been born Aug. 29, 1813, in Lexington, N. Y. His diploma was obtained from Geneva Medical College, where after graduation he was appointed Demonstrator of Anatomy. In 1846 he was appointed Demonstrator of Anatomy at the Buffalo Medical College. In 1854 he was invited to the chair of Anatomy in the Medical Department of the University of Michigan, where his best work was done. At the various medical colleges with which Dr. Ford has been connected he has delivered 109 courses of lectures. During the past quarter of a century Dr. Ford has been considered one of the best authorities in anatomy in this country. Dr. Ford for years delivered special lectures to the dental students on comparative dental anatomy. His death has cast a gloom over the University, and by it that institution has suffered an irreparable loss.

A YOUNG dentist practicing—just begun – sends the following:

SOLILOQUY OF A YOUNG DENTIST.

Oh, how I get the "blues"
  Since nothing I can do,
But wait for the good news,
  To pull a tooth or two.

'Tis hard to sit and wait,
  With prospects mighty slim,
Of getting 'een a plate,
  To mend for some visage grim.

We wait for some kind friend,
  With aching teeth to come,
Alas, his pains tobacco mends,
  Our hands once more benumb.

Such is the test of all,
  With professional desire,
To which succumb the small,
  The great surmount, not to retire.

April 11, 1894.

THE
OHIO DENTAL JOURNAL.

VOL. XIV. JUNE, 1894. No. 6.

CONTRIBUTIONS.

ARTICULATION OF ARTIFICIAL TEETH.

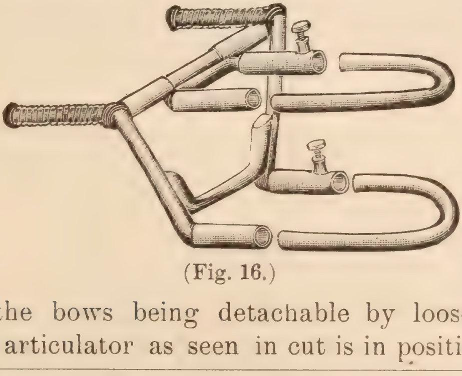
(Continued from Page 119.)

BY GRANT MOLYNEAUX, CINCINNATI, O.

NOTE.—Fig. 14, Page 115, was inverted by printer and should be observed with book upside down.

Some criticism might be made for not reproducing the engraving taken from Dr. Black's Anatomy perfectly, but we only desired to show the relation of the teeth, especially the cutting edges, consequently the other part of drawing was sacrificed. The drawings were only used by us to save time, as we have a skull with an arrangement of teeth, and if photographed would hardly be distinguishable from Dr. Black's drawings.

THE "Anatomical Articulator" is composed of brass wire and tubing and illustrated in Fig. 16. It consists of a base and two brass bows, the bows being detachable by loosening the set screws. The articulator as seen in cut is in position of use, *the*

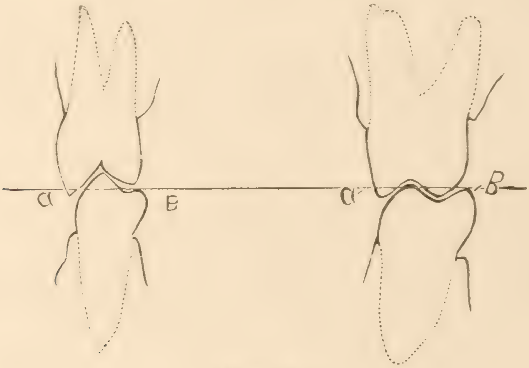


(Fig. 16.)

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

narrow bow being uppermost at all times and upon which the upper model, whether that being an articulating model or a model upon which a set of teeth is to be arranged, is to be mounted; contra, the lower model which is always to be mounted on the wide bow.

The cross bar or tube to which the narrow bow of the articulator is attached, corresponds to the base of our triangle or the line from *a* to *a* Fig. 1 and *c* to *c* Fig. 11.



(Fig. 17.)

At either extremity of the cross-bar is an eyelet through which the "condyle" of the articulator works.

The two spiral springs back of the condyle take the place of the muscles and serve to keep the models in the position of occlusion except when moved about to get the different bearings of the artificial teeth. With a normal natural denture the opposing teeth are in positive contact during occlusion and the same condition should be carried out with an artificial denture. Before attempting this plan of articulating teeth, the conditions must be made favorable to successful results.

1st. We must obtain a correct occlusion of the lower jaw.

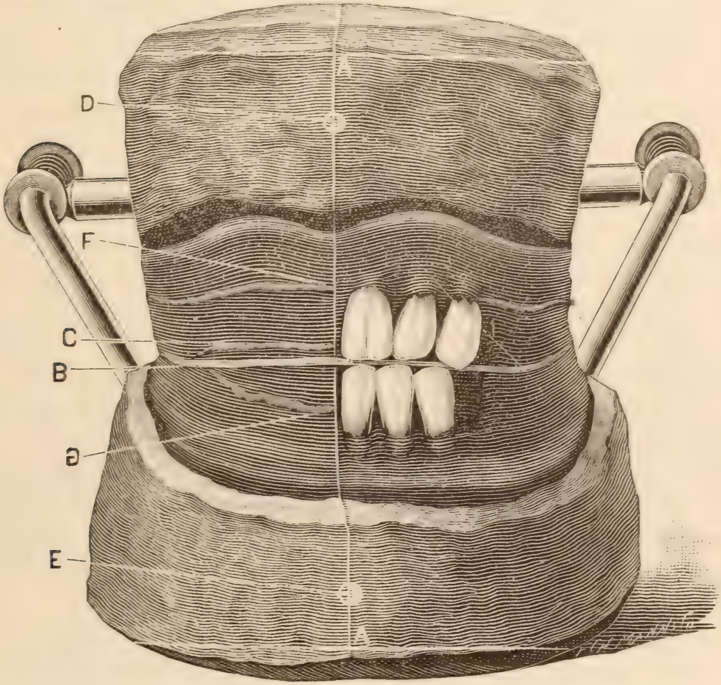
2d. The wax articulating models or "trial plates" should represent the exact length of lips. Fig. 18.

3d. The patient must be observed full face and profile, and facial contour perfectly established.

4th. The median line of face marked distinctly on the trial plates.

We will now try to give accurately the steps as they are followed in using this machine for the articulation of artificial teeth.

The two set screws are loosened and the brass bows pushed firmly back into the sockets and then tightened. The occluding wax trial plates should represent the exact exposure of teeth (Fig. 18, F to B, G to B, and also the plane of the cutting edges of the incisors, Fig. 18 B.) *The horizontal surface of the base of the plaster models should be trimmed to represent the same plane as the occluding surface of the wax articulating models*, Fig 18 A and A. The purpose of this is to mount the case as squarely as possible in the articulator.



(Fig. 18.)

The lower model is adjusted upon the wide bow, the heels pointing towards the condyles, the "bite" wax and upper model also in position, when the narrow bow is turned to rest on the base of upper model. We now take a pair of dividers, separated to measure four inches, placing one foot on a small depression at the condyle and measuring the distance to median line of wax bite from each condyle.

Rule: Let the median line of the mouth, F to T Fig. 1, fall midway between the condyles of the articulator and at the same time let the median line of the bite at the occluding edge of wax be equi-distant, (four inches) from each condyle, when in this position pour plaster, quite thin, over the narrow bow and upper model and at once lift the articulator up by the base and make a bed of plaster on table into which the wide bow and lower model is placed When the plaster hardens, the excess should be trimmed away and we are ready for the teeth.*

We must now repeat a previous statement. The wax articulating models or "bite" should represent the exact length of lips, the proper contour of lips and the median line of face. If these points have been faithfully observed then the lower wax articulating model at the median line would represent exactly the position of the central incisor teeth, inferior. All that is necessary is to cut down to the base plate through the median line of the wax and take out a section, upper and lower, *on one side only*, and enough to admit of placing the central, lateral and cuspid teeth on one side. Fig. 18. After these teeth are approximately placed, the measurements given in last paper are to be followed to fix their exact position, when they should be waxed fast. We have stated that the wax models represent the length of lips, which is true, but we have not accounted for the overlap. When the overlap is determined, just that much should be removed from the occluding surface of the upper wax model. Fig, 18, B to C. After arranging the central, lateral and cuspid, enough wax is removed to admit of the bicuspids and lastly the molars. By this plan the trial plates will at all times be held firmly in contact with the plaster models. When we have one side complete, we begin on the opposite side and finish as the first.

It has been suggested by those not familiar with the articulator that a screw is necessary for opening and closing the bite. Such a screw is not only unnecessary but would be a detriment to the instrument. The wax establishes the bite at all times, and if any lengthening is necessary more wax can be added, if shortening is necessary some wax can be removed.

A word regarding the position of molar teeth may not be out of place. A custom prevalent with certain operators is placing the molar teeth too near the cheek. If a plumb line were dropped from the lingual border of the lingual cusp of the second inferior molar, it would fall clear of the body of the jaw and not through the center of the edentulous ridge, as many artificial teeth are arranged. When the teeth are placed too near the cheek, it is constantly irritated and the teeth are, during lateral movement, thrown out of line of use. The position of the molar teeth would be more nearly correct if a perpendicular line falling through the buccal cusps would also fall through the center of the edentulous ridge. This arrangement might, upon first observation, appear to impede the movement of the tongue. Such is not the case, but to the contrary, the molar teeth are in the best position to receive the greatest assistance from the tongue and cheek in keeping the food in position for mastication.

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*For mounting a full upper or lower case where we have the natural teeth in one or the other jaws—obtain a model of the teeth and place this model in indentations on the wax trial plate and mount, making the same measurements as with the entire denture.

In the selection of teeth, one should keep the requirements before him constantly and select those teeth that will require the least alteration. There are very few sets of teeth, however, that can not be improved, for articulation, by judicious grinding. By referring to Fig. 9 or 15 and 17, the relative size of the cusps of bicuspids and molars will be observed. The buccal cusps of the superior teeth being longer than the lingual, and *vice versa* for the inferior.

These diagrams will indicate the necessity and method of grinding. For fear these drawings may be thought ideal, we take the liberty of reproducing another cut from Dr. Black's Anatomy, Fig. 17. This drawing being taken from life, is a most excellent subject for study, it indicating not only the plan by which artificial teeth should be articulated, but is right in line with our remarks on the angles of teeth. Compare with Fig. 15. Refer now to Fig. 11 and we observe that the first superior bicuspid tooth is the larger. In the lower denture the first is the smaller. In most artificial sets of teeth we find the first bicuspid above the smaller, and altogether too small to look well next to the cuspid. By reversing the order, placing the second artificial bicuspid for the first, or the larger of the bicuspids first, the appearance is not only improved but a better articulation is obtained.

There is one other mistake in many artificial sets of teeth, viz, the first inferior bicuspid lingual cusp is quite as large as the lingual cusp of the second bicuspid. Nature only intended one cusp (buccal) for these teeth, as a lingual cusp is not only useless, but it is in the way of the tongue. Remove it entirely with the stone. The manufacturers of artificial teeth can not construct moulds to suit every individual whim, but we believe however, that they are trying to produce teeth as nearly life-like as possible, in both color and shape and with a fair variety of moulds from either the standard makers, forms can be found that will suit the most fastidious. What little there is wanting we can usually add with our mineral paints and the grind-stone.

With the above remarks and with the aid of Figs. 4, 11 and 17, we believe that the clew to a natural arrangement of the artificial teeth is clear, only needing a little practice to execute it rapidly. When one is familiar with this method the work can be performed in quite the same time as by the old methods, and with an infinitely greater degree of accuracy. The articulator has many other virtues, but I will refer to only two more. To those doing any amount of regulating the instrument becomes invaluable from the fact that the models can be mounted and studied as accurately as in the mouth.

To those doing any quantity of gold plate, or continuous gum work, an enormous amount of labor can be avoided by taking the measurements of the completed dentures with a pair of dividers and marking them on the base of the models, together with a color and size of a central incisor. The set-screws can then be loosened and the models with the bows intact laid away and properly labeled for future reference. They can be referred to at any time, and should the patient be a thousand miles distant duplicate dentures can be constructed and forwarded with every assurance of a successful result. One " base " is all that is really necessary ; the bows can be made " ad libitum," and when one case is mounted and the plaster hard, the models can be slipped out and a new set of bows adjusted for the next case.

We regret our inability to do the subject justice on paper, but if we have awakened in any person a desire to familiarize himself with, and apply the method to suffering humanity, our labors will have been fully rewarded.

By referring to Fig. 18 the reader will observe the plan of arranging the wax articulating models and how the markings are made on the wax. A—A represents the base of the plaster models trimmed to conform to the same plane as B or the cutting edge of wax model from cuspid to cuspid, which line indicates the plane of the incisor teeth. The distance from C to B is the length of over-bite, and as the wax models show the length of lips, it is evident that the wax model must be made shorter by B to C. The wax on the occluding surface of the upper wax model must be trimmed off to the line C. Before trimming off the wax it will be necessary to use the dividers in order to retain the exact length of teeth. Place one foot of dividers in a depression on model at D and the other at B and fasten.

The lower can be marked from E to B at same time, say this distance is an inch and a half from the depression at D to B and from E to B. Mark this on base of models. Should for any reason the wax models become destroyed or your dividers be changed, they can be easily re adjusted by referring to marks on base of models.

The line B is made to approximate in the wax the curves described by the cutting edges of the teeth. G is the point to which the lower lip is dropped and F the point to which the upper lip is raised in laughing. The lower teeth are in position, the upper only approximately. After our measurements are made on the occluding surfaces of wax we trim off the upper wax from B to C and let the teeth overlap.

In concluding this paper we must make mention of the fact that if the bite is taken wrong, this articulator nor any other will make it right. Time spent in taking a correct occlusion of jaws and other markings will never be spent in vain, as it saves an endless amount of trouble.

TREATMENT OF CHILDREN'S TEETH.

BY S. B. DEWEY, M.D., D.D.S., CLEVELAND, O.

Let me claim your attention for a few moments by speaking in a general way about our little patients, the children. If any of us are inclined to hesitate before taking charge of a strange child it is pardonable, there being many breakers to be encountered, and the difficulties to be overcome, perplexing and many times discouraging. The bucking burro is not more uncertain or harder to manage than these household pets, and lucky is the practitioner who can weather the *squalls* and safely guide this this fragile ship—childship into smoother waters of youth and then adult life. The success of this kind of practice will largely depend udon the personality of the dentist. He must be patient beyond provoking and have a natural fondness for children. The little fellows instinctively know who are their friends or foes. Gain the confidence of the future heir of the house and your stock will be above par with every member, even with the head thereof. Many a mother has been led to change her dentist, not from any trouble on her part or fault to be found, but failure of him to get into the good graces of her child, or from fear that his burly manner was unsuited for dealing with children.

Not infrequently do we hear mothers say: "Dr. A— is my dentist, but I can not take my child to him, he is too impatient and severe to get along with children." Succeed with that child, and my word for it, the next time the mother needs dental advice, you will be the advisor.

The earliest age at which a child needs the attention of the practical dentist is about three years, having a full set of twenty teeth. Let us enquire into the office and requirements of this miniature denture. In a child we have a being whose every part is more vascular than in adult life. Active to a degree verging upon perpetual motion. Developing its most important organs before the second dentition is completed. Nourishing a rapidly growing nervous system. Developing a brain that shows its most rapid growths before the second dentition has hardly began. The brain growth is the most rapid before or up to the seventh year. Then it slows up as it were, and other organs are pushed forward. Think of the repair and waste that must be made good owing to its active life. Add to this the growth and development of every part of the body and we form some idea of the demands made upon the digestive apparatus of the child. Then we can see how important that the temporary teeth be in good order that they may properly do their part at the beginning of the digestive process. In receiving nutrition the tissues appropriate in order of their degree of vascularity. The most vascular first and so on down the scale until we come to the bones and then the teeth, they being the densest and least vascular, are the last to receive the proper constituents from the blood. In case of any lack of the supply they are the first to suffer. It is a case of first come first served.

The brain and the nervous centers are the first to come and be served, and well it is so, for upon them depend our well being in everything. They regulate and control every process in the economy. You will perhaps say how does this affect children's teeth? Let me say very greatly. It has been demonstrated that children poorly fed and crammed mentally in the public schools, have their teeth begin to deteriorate in a few weeks. How necessary that every function in these little ones should be evenly balanced and carried out with intelligent regularity. True the child is not supposed to live upon foods that requires the mastication that the adult does, or he would have had a different denture at first. In this age as soon as baby is weaned he goes to the family table and helped to whatever pleases his fancy among the viands served. This is an indulgent age and baby puts off childish things at a surprisingly early period. If he is to live at the same table with the older members of the family, then is it not quite as important that his molars should be kept in as good order.

Can we have proper digestion, assimilation and appropriation when the first organs of the digestive apparatus are out of repair? The ruddy cheeked sturdy lad is not he of decayed and suppurating teeth. Their legacy the pale face and emaciated body. Talk with the mother about the proper diet and care of children. You will be surprised at her eagerness to learn of those matters. The good of her offspring is a mother's first care. Lead her in the right path and the generations to come will be more appreciative of your efforts. The giving of lime salts in the concentrated form, or the pure salts in hopes of benefitting the teeth is of no avail. They are nearly always discharged from the body as taken. There are all the essentials of tooth and bone development in all the common articles of food. The point to keep always in mind is to see that the digestive and assimilative organs are in proper condition to perform their offices, then the teeth will be all that can be expected.

Concentrated articles of food are sure to derange the digestive process if persisted in. It being a well known fact that the dumb animals fed upon grain containing the essentials for sustenance will soon loose flesh and strength, but give them plenty of coarse straw with the grain and they will thrive abundantly; showing that the animal economy needs food of a complex nature that can be broken up and reduced to simple elements in nature's laboratory, ready for nature's appropriation and use. These organs and systems were placed in us for a definite purpose; they have a work to perform and must be supplied with the crude materials out of which to elaborate this building of ours.

We do not find teeth poor in structure and development in one whose physical functions have always been at or near the normal condition. Well fed children of the working class show the best tooth structure. Plain coarse food and active out door life are condusive to perfect physical condition. A child living in this manner will require little or nothing done to his temporary teeth. There is a striking contrast between the sound, pearly teeth of this class, and the much decayed tartar covered denture of the pampered pet of his wealthy neighbor. Discourage the too free use of sugars. In my opinion their use in large quantities and constantly, cause the loss of more teeth in childhood and youth than any or all articles of food put together—to say nothing of the injurious effects upon other parts of the system. Note the bevy of school girls on the street cars of a Saturday afternoon, (or any day if you please, providing they can get to the place of sale) with their package of confectionery. Her complexion is muddy and covered with black-heads and pimples. Let her smile and you see teeth dark grey with white decay on every side, unless the dentist has already got them well plastered with gold. No matter how well he may have done his work, the success if so you may call it, is only of short duration in such surroundings. I have yet to see in the mouth of one who indulges largely in sugars and confections a clean and healthy denture. To-day we find more teeth sacrificed by the use of confections than by poor dentistry.

Begin early to cultivate the habit of caring for the teeth. Children's ideas of cleanliness are spasmodic, but treat it encouragingly in hopes the spasms will be of more frequent occurrence, the reward will soon follow. The mother will ask, does it pay to fill the temporary teeth? The above ought to convince any mother; if it does not our mission has failed, with her at least, and we must look elsewhere for our laurels. Be sure you say to her that whatever you do for her child is not done as for her, but temporarily, and may need replacing. Do not let them expect unreasonable things of operations made under such unfavorable conditions. Better they be surprised at the length of time they last, than disappointed that they are not everlasting.

Don't be in a hurry when your little patient arrives. Have plenty of time. He will have many questions to ask, and much that is new and strange to see. Give them the morning hour while they are fresh and buoyant. Some of you will say, I cannot afford to give them the morning, it will not pay. That gentlemen is just as you make it. Take my advice and have no half fare for children; charge full price, and as I have said before have plenty of time and give your undivided attention. Your future practice depends upon these same children, why not render them your best services?

The length of time you may keep a child in your chair depends upon circumstances and conditions. Half hour sittings are usually long enough. Do not overtax their patience or endurance; should you, they will object to a second sitting. It is well to cultivate the art of story telling. Interest yourself in childish sports and pranks, so you can talk of things most near and dear to them. In fact make them feel that they are important factors in this life, and they will even wish to visit their dentist. Keep the temporary teeth until time to be replaced by the permanent set. Better have one with fistulous opening on the gum, than suffer its loss before its time. Let the child make frequent visits to the family dentist after three years of age, thereby preventing many sleepless nights, a full mouth of useful teeth insured, and much irregularity aborted.

"Last but not least," post the mother as regards the coming of the sixth year molar, that she may be on her guard and not neglect these important teeth until too late to save. It is surprising how few are aware that they belong to the permanent denture—that there are twelve teeth that are not replaced.

DENTAL EDUCATION.*

BY G. H. WILSON, D.D.S., CLEVELAND, O.

It is apparent to the observant mind, that a greater advancement in methods of general education, has been made in the past twenty-five years, than in any similar period in our history, and we can not but believe that we have only fairly entered upon this era of advanced methods, and no one can predict what wonderful results will be produced in the near future.

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*Read before the Cleveland Dental Society, May, 1894.

Perhaps the principles involved in the kindergarten and manual training schools have had as much to do with transforming the old into modern ideas, as any thing we could name. As the foundation principles are practically the same in both kindergarten and manual training, we will hereafter use only the latter term.

To define the term manual training, we can not do better than to quote from an excellent article in the March number of the *Arena*, by Mr. Heinemann: "The word *manual* may mean either by the hand, or of the hand. In the compound expression of manual training it must, however, be always taken to signify by the hand; or, manual training ought to signify, training or education by the hand, but not education of the hand." In explanation he also says: "For an education of the hand, means a development of the hand in a line of handicraft or of trade. Such a development of the hand, is a mechanical habituation of the muscles of the hand and limbs, to a rapid and certain execution of particular kinds of movements, calculated to produce certain material results, demanded in particular trades. It is a one-sided development and has but a small influence upon the brain, predisposing it to think always in certain established ruts. Such a habituation renders the brain more or less unable to take a general or all sided view of the subject."

A manual training school should be one, where one of the avenues to the mind of the scholar is by the hand.

It is conceded by all teachers of manual training, that the object is not to teach or prepare a young man to follow any of the trades, that are used incidentally to educate and cultivate the mind. It is true, that if the young man after graduating from a manual training school, should decide to follow some one of the trades used in the school, he will find he is quite advanced in his apprenticeship; but his intellectual acquirements will show the greater advancement. The shops are only used to cause the mind to act and comprehend, and work out certain truths; but before the hand becomes so educated that the mind is passive, the student is carried on to the next step, thereby keeping the mind constantly employed, continually expanding and gaining the desired culture.

Perhaps the thought can be made more clear by recalling to your minds, our visit to the Barber Match Works last spring, while attending the Northern Ohio Dental Association. You will remember the wonderful exhibition of manual dexterity, of one of the young women in filling the boxes with matches. The operation consisted in filling the tray with 300 matches, opening the telescoping cover, placing the tray in the cover, and depositing the closed box in a large basket.

While it was almost impossible for the eye to follow the motions, yet it seemed almost incredulous to us, when one of our members, with watch in his hand, informed us that sixteen filled boxes had been deposited in the basket in thirty seconds.

That is education of the hand to one particular thing, and is not a development of the mind. Of course all muscular action is caused by the brain, but action becomes passive, the mind simply wills to do, but does not instruct how and why ; that active agency of the brain having become long since unnecessary. There was no special intelligence expressed in the face, nor should we expect there should be. This one thing, nine hours a day, year in and year out, could not do otherwise than place the possessor of the controlling brain in a rut. Can we not see how inhuman and degrading it is to place young children in such treadmills, in our factories?

You will also observe, why the manual training school can not produce expert workmen ; because the countless repetition, necessary to perfection, would cease to be stimulative to mental activity.

An extract from the report of Mr. Sabin, superintendent of public schools of Iowa, for the year 1889, very clearly sets forth the objects of manual training ;

"Industrial education does not as I understand it, mean a lessening of intellectual vigor. There is no design of lowering in any degree the standard of scholship. It is in no way associated with learning a trade, or serving an apprenticeship. Industrial education does not of necessity fit the child for the industrial pursuits of after-life, although no harm could ensue if it did. Perhaps I might qualify that remark. Industrial education should fit the child, not for any particular industrial work, but for any work to which, in the emergency of life, he may be forced to turn his attention.

"It should expand and increase his resources, and give him confidence in himself. It should arouse and strengthen the manly instincts and powers of the man.

"We are told that knowledge is power; but rather, applied knowledge is power; and this is the key to our present civilization and progress.

"Industrial education, as far as it seeks to give skill to hand and eye, concerns itself as much with the probability as with the possibilities of life. It fits the child to work at the forge and the bench, to plow and reap and weave, just as much as it does to sit in the editor's chair, or to fill a position of emolument or power.

"It does not seek to impress upon the child the dignity of labor, but the dignity of manhood. A sound heart which throbs for God and humanity, is a good thing; a sound heart and a clear strong head is better; but a sound heart, a clear head, and a skilled hand gives the nearest approach to a perfect man."

Knowledge is acquired through the five senses. It is obvious, they are not equal in value in the acquisition of facts. In the old method of teaching the senses of sight and hearing were the avenues to the brain, in the new, the sense of touch is exalted to an equal position with the first two.

That this sense is a very strong one and well worth cultivating is wonderfully demonstrated by the blind. I have a friend, born blind, that will invariably tell if a third person is present in a room; will call a person by name, by a touch of the hand, more readily than many people can by the sense of sight; he will tell the color of a horse, and also remark about the condition of the fields as he passes over the road. The impressions are just as real to him, and produce just as decided an image upon his brain, as an impression upon the retina will produce an image upon our brain. That the impression made upon the brain, by the retina of the one, and the derma of the other, are the same, we can not affirm, any more than we can know, that a certain number of molecular vibrations that we have been taught to call blue, produces the same effect upon each of us.

In Laura Bridgman, we probably have the greatest development of the sense of touch, that the world has known. At the age of two years, through severe sickness, she lost the two senses of sight and hearing; so that her future education and cultivation was entirely through the third sense of touch.

These illustrations show the possibilities of this third sense; but it does not follow that it would be profitable for an individual with all of his senses, to cultivate this one, so that it can take the place of another sense; but it does follow that if we use the sense of sight and hearing as much as before, and add the third, touch, to our means of acquiring knowledge, we must necessarily be a more perfectly developed man.

These desultory remarks upon general education are designed to prepare the way, for some thoughts upon the new method of teaching dentistry.

Instead of the term manual training, we use the term "Dental Technics." According to Webster, technic or technical is, "to bring forth," "produce," or, "prepare."

Dr. Weeks in the April *Review*, in a most excellent paper upon Operative Technics, expressively defines dental technics, when he says, "The what and the how, with much of the why left for subsequent teaching."

The rising generation owe much to Prof. G. V. Black for his genius in developing and introducing this method of teaching into our colleges. Doctor Ottofy strikes a warm sympathetic chord, when he speaks of the Doctor as "The Giant of the West."

The design of dental technics is to train the hand and the eye in the methods, as well as the mind in the principles of dentistry. This is accomplished by a thorough and systematic course of *work*, under personal supervision, upon models and extracted teeth. All can be profited by reading the above mentioned paper of Prof. Weeks; and those desiring to pursue the investigation farther, will find instructive reading, by the master of operative technics, Dr. D. M. Cattell, in a paper presented before the late Dental Congress, and also in the *Review* some two years ago.

The object of this paper is to call especial attention to prosthetic technics.

We believe that the study of prosthetic technics should precede that of operative technics, except that portion of the operative included in dental anatomy and possibly sections of the teeth. Our reasons for this are: Not to occupy the mind with too many practical operations at one time, as the student must necessarily carry on several theoretical studies. Also, after a year spent in prosthetic technics, the hand and eye has been so trained that the student is better prepared to take up operative technics. And then, I believe a better interest and more faithful service is conserved throughout the three years, by devoting the whole attention to one department, and reserving the other for a future time.

I desire to say that there is no place in the faculty, that more demands men of experience, and an unusual supply of patience and perseverence. They should be men thoroughly in love with their work, and that demand the respect of the students; if they can command the admiration and affection, so much the better. Then with the ability to impart knowledge and enthuse the student to his best effort, we have the foundation of a successful teacher, and a guarantee that the future dentist will be far superior to those of the past.

You naturally ask what are the advantages of technics. Several years ago a dental dealer of wide experience with the profession, said of Ann Arbor, "They are well up in operative but weak in artificial work." That criticism can not be made to-day, thanks to prosthetic technics. Prof. Flagg is reported as saying, and he certainly ought to know whereof he speaks: "That the college laboratory was a smoking room, where they occasionally did a little artificial work, if a case presented." With technic work, it is a perfect bee-hive, and the drones, if there are any to carry out the simile, they are summarily dealt with after the season is over.

What is the explanation of the wonderful prosperity of the best colleges of Chicago? I assert the introduction of technic work. Prof. Haskell's Post Graduate School of Prosthesis, is purely and simply a technic course. So I answer that the best logic is, that experience has taught, that it means the greatest success yet attained by any method. It educates the hand and the eye, it profitably occupies the time, it gives a greater variety of knowledge and experience than can be acquired in the same time, by any known method.

The plan pursued by the Dental Department of the Western Reserve University, is for the first year Prosthetic Technics 12½ hours per week. Lectures upon Prosthesis and Metallurgy 3 hours per week. Dental anatomy with the various other subjects usually taught during the first year are pursued. In the second year complete prosthetic technics, including crown and bridge technics, and do all the practical work in prosthesis. At the beginning of this year operative technics are taught. The last of the year the student is entitled to some time in the operating room if he has made sufficient progress. The third year is entirely devoted to the operating room and the practical crown and bridge work.

I will hastily enumerate the steps of the prosthetic technics of the W. R. U. You will observe that no place in this outline is given to orthodontia. Recognizing the importance of that subject, we make it a chair by itself.

Three weeks are spent with impressions and models, first with wax, then modeling compound and last plaster. The students take impressions of each others mouths. During this time a study is made of the effect of hard and soft mixing of plaster, hot and cold water, use of salt, sulphate of potash, alum, and the various separating fluids. At the close of this work full upper and lower models made from each of the three impression materials must be deposited with the superintendent.

We now begin the study of vulcanite. A plaster impression is taken of the palatine surface only, make model, wax up smoothly, flask, pack, vulcanize and finish. This has given a general idea of the construction of a vulcanite denture, use of flasks, vulcanizer, lathe, etc. The piece is then broken and mended by process No. 1 (ironing in process). The next is a full upper impression in plaster, make model, cut away a central incisor and a bicuspid; the central incisor to represent recent extraction, and the bicuspid to represent that full absorption has taken place. Construct a plate, the central ground to the gum and the bicuspid gum restored with base material, vulcanize and finish. The bicuspid is then removed from the plate, and replaced by process No. 1. A lateral incisor is then added by process No. 2 (waxing to place, flasking, packing and vulcanizing). Both of these pieces have their palatine surfaces finished by the liquid silex process.

We are now ready for a full upper denture. We furnish a model from which each member of the class takes an impression in modeling compound, and makes a model for his individual use. The teeth are arranged without any attempt at articulation, but they must be arranged by the Bonwill dental circle, perfectly symmetrical and anatomically correct. Use pink rubber for facing and red rubber for body of plate, both vulcanized at the same time. The palatine surface finished with tin. The piece to be perfectly polished.

In our next operation we give especial attention to articulation of a full upper and lower denture: but as we have completed three pieces of vulcanite, we do not construct them of this base, as it would not give sufficient occupation for the mind to compensate for the time required. So we introduce simple models for metal work. Swaged aluminium, rubber attachment for the upper and cast metal (Kingley's formula) with rubber attachment for the lower.

When these are finished we continue the study of cast bases, by making the two partial lower pieces. The one cast with a wire stiffener, and finished for vulcanite attachment, the other cast direct to the teeth, this also has a wire strengthener.

We now construct a partial vulcanite upon the same model used for two partial cast bases. When it is finished, it is broken and repaired by process No. 2. Thus each student has had four repair cases, two by each method.

The last piece of vulcanite is a Chase combination with aluminium. The pink gum facing added by a second vulcanization.

As our last plastic piece, we construct a full upper celluloid, upon a metal model, labial and lingual surfaces finished with No. 60 tin, the labial surface stippled.

We now enter upon strictly metal work. We use brass and silver solder. Each student has already molded and cast for a full upper aluminum, a Chase combination, and a die or metal model for the celluloid. We furnish an easy drawing model of a partial case with a large number of teeth ; a certain portion of this piece must be doubled ; the soldering done by the mouth blowpipe. The next piece is a Cleveland vacuum cavity base, the soldering done by the same instrument.

Our next piece, consists of four incisors, single gum teeth, well jointed and ground to fit base, backed and soldered, rimmed and two clasps. With this piece we introduce the mechanical blowpipe. The next is a partial lower swaged in two sections, each extending from a heel, and extending sufficiently far to double the portion back of the remaining natural teeth, soldered and two clasps. The last required piece is a swaged base with heavy undercuts. The die is made by the aid of cores.

This will be as much as the average student can accomplish in one session of six months. For the students that are more rapid in execution than their fellow students, and have some time to spare, we haxe several models that are difficult to mold and swage over. In this work the student depends entirely upon his own resources. as they are designed to thoroughly test his ability.

As they are not required, they do not count for or against the student in his examination for the degree, as all the required pieces do.

The second years work begins with crown and bridge technics. In this we use German silver, with silver solder, brass for filling cusps, pure copper for backings if desired.

We require five shell crowns:

1st. Bicuspid must be fitted to tooth stump.

2nd. A bicuspid with filled cusps and articulated to model.

3d. Molar with filled cusps and articulated.

4th. A central incisor swaged in halves.

5th. Cuspid, flap system.

Any one of the six anterior teeth can be formed by either of these methods. We require four porcelain faced crowns, a Richmond and a Case incisor, and the same two styles of bicuspids. We also require the following three bridges:

1st. First bicuspid dummy, lug upon cuspid, half cap for second bicuspid.

2nd. Two bicuspid dummies, with half cap for cuspid and shell crown for molar.

3rd. Half cap for cuspid, four incisor dummies, porcelain faced crown for cuspid, two bicuspid dummies and shell crown for molar. These bridges must all articulate to model.

This is the required prosthetic technic work for each student. We have technic courses which are optional in continuous gum work, porcelain crown and bridge, movable bridge, porcelain inlays, and cast aluminum. This work is all covered in the lecture room.

With the winter of 1895–6 our term will be lengthened to eight months, when we contemplate a technic courte in metallurgy.

I believe we have been reasonably successful, in producing a course that begins with the simpler operations, and gradually leads up to the more difficult; one that stimulates mental activity, at the same time it taxes the ingenuity of the average student; one that is comprehensive, yet covers more of the foundation principles than is possible by the old hap-hazard "practical method."

There is no unanimity in the teaching of the colleges at the present, only about one-fourth of the schools having adopted the technic method.

Having been proposed by Prof. Black and adopted by the Chicago College in '87 or '88, its influence is rapidly extending, so that we firmly believe it will carry all before its onward sweep.

We trust the organization formed of technic teachers at the Dental Congress and to meet at the next American Dental Association may become as influential, and as valuable to the profession, as the Association of Dental Faculties.

I had thought to make at least a half of this paper touch upon the future of dental education, but the paper is already too lengthy, so with your permission we will leave that for a possible future subject.

THE ALABAMA DENTAL ASSOCIATION.

(Special report for OHIO DENTAL JOURNAL, by Mrs. J. M. Walker.)

THE Alabama Dental Association met in twenty-fifth annual session April 10, 1894, at Montgomery, Ala. The meeting was called to order by the President, Dr. T. M. Allen, Birmingham, and opened with prayer.

After a cordial address of welcome by Col. Edward A. Graham, to which response was made by Dr. Chas. a Merril, the President read his annual address. Being the twenty-fifth meeting, the President's address was largely a review of the history of the association. He also made a number of recommendations of a practical character, in the interest of the advancement of the profession. He especially recommended that earnest efforts be made to secure the repeal of the features of the dental law permitting the extraction of teeth by other than dental practitioners, a feature which is being so abused by mountebanks, street fakirs, Indian doctors, etc., who with golden chariots and brass bands parade our streets, attracting crowds of the ignorant lower classes by the promised

EXTRACTION WITHOUT PAIN.

Injecting their deleterious nostrums, breaking off teeth, lacerating the gums, they reap a rich harvest of "quarters" while inflicting injuries untold upon their deluded victims. This subject was discussed at some length and many instances cited of the permanent injuries inflicted.

In regard to securing prohibitory legislation, Dr. J. Y. Crawford said, If we can get the unanimous voice of state societies that it ought to be, and get all the state boards to say that it ought to be, if no one pulls back, but all push forward, in less than five years we will get it on the statute books. Talk to an intelligent man, and you can show him where he is derelict in his duty. If all the facts in this case can be produced you can convince every intelligent legislator that it is his moral duty to support such a movement. If he can't see it then you had better retire him to private life. In union there is strength. If the twenty-five thousand American dentists say it ought to be, I have sufficient confidence in the love of right, and in the integrity of our legislators, to say *it will be done.* The promiscuous extraction of teeth injures the American people more than all other surgical operations. It does not kill directly but it is an insidious monster ; it is cumulative in its effect, and it is a pity it don't kill somebody outright, and we would have fewer irregularities and deformities.

Dr. W. H. Morgan said : I am very glad to see this movement inaugurated here. Alabama occupies the proud position of having been the first state to pass a dental law—away back in 1844. I know your influence will all be in the right direction. Then go forward and aid in the good work. Assert yourselves and make yourselves felt.

No papers being ready for the first session, by invitation—

Dr. Thos. P. Hinman, of Atlanta, Ga., described and demonstrated his method of mounting a Logan crown, as follows :

The face of the root having been properly trimmed, and a suitable crown selected, a small piece of paraffine wax is molded around the pin, close up to the porcelain. A small disk of No. 60 tin-foil is then cut a little larger than the abutment of the root, and threaded on the pin close up to the wax. The crown thus prepared is then placed on the root and forced to place, the wax driving the foil into perfect apposition with the abutment of the root, of which it receives a perfect imprint. Removing crown, wax and foil, with sharp pointed scissors snip the edges of the foil at intervals, to the circumferance of the root as outlined on the foil, first, however, with a warm knife trim away the excess of wax to the size of the root. A small pellet of wax is then placed on the point of the pin and the whole inserted point down, in quick setting plaster, just up to the porcelain.

When the plaster is hard, warm the crown and remove it, the snipped edges of the disk securing the foil in the plaster, leaving a perfect, metallic unfaced model of the abutment of the root, exposing to view every surface of the root. The crown being cleaned of the wax is then ground to the root, expeditiously and accurately.

The pellet of wax which was placed on the end of the pin, allows space for it to penetrate the plaster model of the root as the porcelain is ground away.

Drs. Crawford, Muril, Allen and others commended highly this evidently practical method of overcoming of what is sometimes a great difficulty. It adds to the value of the already invaluable Logan crown.

The rest of the morning session was occupied by the relation of

INCIDENTS OF OFFICE PRACTICE.

Dr. J. D. Adair told of a case in which three superior incisors were abscessed. He had treated them for six or eight weeks by every method known to him, desiring to place Logan crowns on the roots. Finally the young lady was obliged to return to her home, and wished the crowns put on at once. Seeing advertised Dr. Emil Schrier's preparation of potassium (Kalium natrium) he decided to use it as per instructions. He made an application, filled the root canals and put on the three Logan crowns at one sitting. The young lady went home and he did not hear from the case for five months, when he was much pleased to learn that the operation had proved a perfect success. The crowns were put on ten months ago, and he has heard from them several times since and they continue to be entirely satisfactory with no return of the alveolar trouble. In reply to a question, he said that there was still great pericemental tenderness, with pus constantly present until he applied the Schrier preparation.

Dr. J. H. Cronland asked for methods of obtunding sensitive dentine, as he had a tooth to prepare for a gold crown, on which he had exhausted everything known to him in that line, but was not able to get it into proper shape, owing to the great sensitiveness.

Dr. T. P. Hinman said that it was very desirable to complete the operation at the first sitting as the sensitiveness of exposed dentine increases greatly in the interval between sittings.

Dr. T. M. Allen uses ammonia and hot burnishers.

Dr. Chas. A. Merril asked, why not go back to the old standby chloride of zinc, which should be applied when merely deliquesced getting the escharotic action. From one sitting to the next the tooth should be protected by one of the little gutta-percha caps, which must be warmed and molded over the tooth.

Dr. W. G. Browne, Atlanta, Ga., has great success in the relief of sensitive dentine through constitutional treatment, by opiates, getting a patient into the condition that they are willing and able to bear it. For very nervous patients, who are hypersensitive all over, you must give them something that will enable them to bear pain.

Dr. T. M. Allen gives his nervous hysterical patients inhalations of oil of gaultheria, one part to eight of alcohol, inhaled from a napkin. It will quiet the nerves and occupy the mind, so that you can work for them very comfortably when at first they would shrink even from the mouth-mirror.

Dr. S. W. Foster obtunds sensitive dentine with nitrate of silver. Moisten a pledget of cotton and take up with it a few crystals of argenti nitras, place in contact with the dentine and hold in place with a gutta-percha cap for several days.

Dr. H. D. Boyd has found that the effectiveness of silver is increased when moistened with alcohol.

Dr. Cronland finds the action of nitrate of siver very superficial.

Dr. C. L. Boyd thinks that is because it is not retained in contact long enough.

Dr. Merril says that it is escharotic to the soft tissues, constringing the membranes of the vital tissues in the tubules of the dentine, being thus very penetrating, rather than superficial, which accounts for the great success attending its use for sensitive dentine in deep cavities.

Dr. T. M. Allen, advises against the use of nitrate of silver where the teeth are very sensitive to thermal changes, as the dentine is probably very porous, and will stain readily.

Dr. Chas. A. Merril introduced the subject of

GEMINOUS TEETH.

Asking how many had met with them and whether it was advisble to interfere with them.

Dr. Cronland had had a specimen, but concluded to "let well enough alone." He thought the patient was perhaps fortunate in having two instead of four approximal surfaces inviting decay.

Dr. W. G. Browne described an interesting case in

ORTHODONTIA.

A case of general importance because of the conditions, the method of treatment, and the results. The patient was a little girl of twelve or thirteen, very pretty except for the deformity of the lower face, due to protruding upper front teeth, the entire lower lip passing under when the mouth was closed. The superior incisors were very long and very thin and the lower incisors impinged upon the gum on the palatal side of the upper teeth. From the social position of the family it was very desirable that the deformity should be corrected. A careful study of the case convinced Dr. Browne that it was not a protrusion of the upper jaw, but a lack of development of the lower maxilla, the chin being also very receding, sloping back from the mouth to the throat. He constructed a plate for the roof of the mouth, thick enough in the anterior portion for the lower teeth to strike upon it, and so constructed as to open the jaws sufficiently for the molars to stand a quarter of an inch apart, with a slight incline at the point of contact of the lower incisors with the plate. With this plate adjusted in the mouth, the family went to New York for six months. When they returned to Atlanta and he first saw the little girl he could scarcely believe it was the same child, so greatly was her appearance improved. The molars had elongated until they were in occlusion, the lower incisors passing under the upper ones only half their length. But the most remarkable feature of the case is that the lower jaw had elongated until the bite had "jumped" one whole tooth giving a pleasant contour of the profile of the lower face making it perfectly symmetrical. All this had been accomplished in six months, without any attention, so exactly was this simple apparatus adopted to the needs of the case.

Dr. J. M. Orr exhibited a rubber plate, made extremely thin by the Morris patent process. Imitations of approximal fillings in some of the porcelain teeth were very ingeniously made by placing little pieces of gold within the teeth, secured in the rubber before vulcanizing, which were burnished down to the tooth in finishing the plate. The little pieces of gold are soldered to the strip of gold to strengthen the very thin plate.

Dr. Chas. Merril obtains the same effect by cutting a channel in the tooth with a diamond disk. This he fills with plaster before vulcanizing. When the plate is finished he gets anchorage in the vulcanized rubber and builds down in the cavity cut in the tooth.

Dr. J. A. Frazier illustrated his method of securing a correct bite where the patient protrudes the chin. He places one hand on the back of the head, and the other over the chin, exerting strong pressure, forcing the chin back at the moment of *biting*.

Dr. J. C. Frazier accomplishes the same object by placing his thumbs in the sigmoid notch.

Dr. B. H. Morgan said that no rule could be given applicable to all cases. The ligaments which control the condyle are very lax in some, very elastic in others; some can draw the jaw much further back in the glenoid cavity than others. With some patients it is almost impossible to get them to relax the masseter muscles.

Dr. Merril spoke of the importance of correct nomenclature in this branch of dentistry. The terms *impressions*, *molds*, *models*, *cast*, are used in a very confused and confounding manner. The proper sequence is: first the *impression* taken from the mouth; then the *cast* made by pouring plaster into the impression. This is waxed up as a *model*. The wax is removed and a *mold* obtained with which the rubber is pressed or the melted metal poured if for a cast plate.

Dr. Pearson related an amusing incident in this connection, showing the importance of using correct terms even with the patient. An old lady who was very hard to please was having a plate made. When he tried the teeth in on the wax base-plate she was very indignant and said she was not going to wear that nasty stuff in her mouth!

He broke this, however, in removing it from her mouth, and having to take another impression, told the old lady that the first impression was only *temporary*; that he now had to take the permanent impression. She submitted, but unfortunately when the plate was about finished he dropped it and stepped on it, breaking it so badly that a third impression became necessary.

This the old lady refused to have taken, saying that he had a *temporary* and a *permanent* impression, and would not have him do anything more for her. So she went to another dentist. He was more fortunate than his confrere, and completed the plate to his own satisfaction from the first impression. To his amazement, however, the old lady refused to accept a set of teeth made upon *a temporary impression*, but went back to the first dentist, explaining the reason of her dissatisfaction with the other man. Needless to say he made her plate from *a permanent impression!*

Dr. Chas. A. Merril related a peculiar incident in orthodontia. At the first step towards regulating the upper teeth of a girl thirteen or fourteen years old, her dentist had extracted the left superior first bicuspid. Before anything more was done, the family left, and when, sometime later, the case came into the hands of Dr. Merril the space had entirely closed, with a somewhat one-sided position of the teeth, which were virtually in good position, but with faulty occlusion. While studying the case he was putting in some needed fillings. One day the young lady complained of very severe pain in the left inferior central incisor, which was soon crowded entirely outside of the arch. It occasioned such severe pain, with a high grade of inflammation, that the father demanded its extraction. This was done and the space now closed. Apparently the influence of the constricted upper arch, in seeking proper occlusion, was so great and so direct as to force this tooth completely out of the arch, the previous extraction of the superior left first bicuspid thus necessitating or forcing the removal of the inferior right central incisor.

The first paper read, was entitled—

Physiological Chemistry and Therapeutics,

by O. C. Farish, Camden, Ala.

In this paper, Dr. Farish reviewed briefly the great priciples underlying the science of physiological chemistry, mentioning a few of the most noticeable facts, as the consumption of oxygen and the discharge of carbonic acid, the presence and absorption of moisture, the definite limits of temperature, and other essentials of the phenomena of life, whether animal or vegetable ; the classification of the chemical ingredients of the body and their relative proportions and importance, etc.

He spoke of the importance of noting carefully the pathological condition not only of the mouth but of the system generally, in order to supply successfully the therapeutical agents demanded for the alleviation of such conditions; the first and most essential thing being to remove the *cause* of irritation, general or systemic treatment being often necessary before what is but apparently local trouble can be successfully reached. Dr. Farish closed his paper with a flowing tribute to the future, dawning upon the science of dentistry.

Dr. W. H. Morgan, in the discussion of the paper called especial attention to the point made—"first remove all causes of irritation." All cures depend upon the removal of the cause. Alveolar abscess is one of the troubles we most frequently encounter. As a matter of fact we do not *treat* alveolar abscess; we simply *remove the cause*, Nature will do the rest.

Referring to the glowing picture painted by the writer, of the future of dentistry, and the honors awaiting us, Dr. Morgan said, we have reason to pride ourselves on what has been accomplished, but we must also bear in mind that much is due to others. Like the builders of old, we have found the stones cut and shaped in the quarry; the timbers cut and hewed and numbered. We have found them all ready; all we had to do was to put them together, they were exactly fitted, ready for their places, by the chemists, the metallurgists, etc. We have drawn from all the collateral sciences. We do not stand isolated from the rest of the world; many sciences have contributed to the grand result we proudly call the science of dentistry.

Dr. J. Y. Crawford said, that another point in the paper challenges our most thoughtful attention, and is more pertinent now than ever before to odontological science. In the management of cases we must consider, not only the special therapy, but we must look at it from a constitutional and systemic standpoint.

We are not doing our whole duty when we assume to manage and treat as a specific affection that local form of disease known as dental caries. It is a pathological factor of systemic origin, aside from local surroundings. Away back of, and antedating present conditions, are etiological factors, found in the organism. There is hereditary transmission of caries from father to child; not that I believe that caries is transmitted directly, but a physical dyscrasia—a susceptibility, present in marked degree.

There is a form of dental caries due to constitutional conditions left uncontrolled that will baffle the most skillful treatment. What is the most common cause of secondary or recurrent decay around fillings? I would say there are etiological factors that cause failures of fillings from the hands of master operators. There are conditions of *pericementitis*, due to physical dyscrasia, that you may treat *locally* for days and weeks in vain, until you resort to therapeutic treatment. In *pulpitis* the nervous system is involved; constitutional conditions aggravate it; anodynes alone are of no avail; you must control the heart's action, lessen the power of its action and then your anodynes will prove of service. I could name many other similar cases, then follow out the suggestions of the paper and do not rely altogether upon local treatment. Look into the preceding pathological conditions that led up to the local trouble. The operators of to-day are to be congratulated that they are able to accomplish much that could not have been done heretofore. We have learned to look for *causes* back in the organism, back of the tissues involved in metabolism.

We upbuild and restore equilibrium. Through the line of chemical therapeutics, much may be accomplished.

If the question of the etiology of diseases pertaining to the mouth is solved by odontological science, it will hold a position paramount to all other sciences.

Dr. L. D. Carpenter, continuing the line of metaphor suggested by Dr. Morgan said: many of the blocks have been tried and found wanting; unfit for a place in the building we are erecting; much that was once thought valuable has been relegated to the rubbish pile; but even of this, all has not been entirely lost; some parts have been found agaia, and being trimmed and polished are found after all really the best we have. The true merits were not comprehended, and so it was laid away on the shelf, but when brought down, and the dust brushed off, is found to be worth more than much that is newer. To the young men, therefore, I say, be constant in investigation; there are great improvements yet to be brought forth. Much that is puzzling and vexing to us now in pathology will be made clear and be easily handled by you in the future, as the result of your work and your investigations.

Dr. Wm. Crenshaw said, I agree with the previous speaker that it is well that we give these subjects over to the younger men, and I hope that they, who have all the increased advantages of those later years will let us hear from them.

So many duties crowd and press upon the older members that they are not able to give these subjects the careful thought and the time that their importance demands.

Dr. J. D. Adair, Clayton, Ala., read a paper entitled—

Ignorance and Neglect of Parents in the Care of Children's Teeth.

Recognizing the importance of having some method of enlightening the general public in the care and preservation of the teeth, and especially giving mothers a knowledge of the care essential for the preservation of the deciduous teeth, Dr. Adair seeks a means of doing this without infringing upon the code of ethics, which prohibits newspaper articles and pamphlets issued personally by the dentist. Until this object can be attained quacks will continue to thrive and teeth will be extracted by thousands that could and should be saved. How can the people of Alabama be educated to a higher standard, in the care of the teeth, without a violation of the code of ethics?

The answer to the question, suggested by Dr. Adair is for the Alabama Dental Association to appoint a committee to prepare a suitably illustrated pamphlet, giving the information necessary for the public; the pamphlet to be endorsed by the Association, published by the Association, and furnished to the members for distribution.

This would be counsel emanating from an accredited, honorable source, upon which the public could rely. It is the duty of the profession to prevent unnecessary suffering, and if this or or similar plan were to be adopted the practical result would soon be seen in fewer teeth to be extracted because of parental neglect, fewer pulpless teeth to be treated, and fewer teeth recklessly sacrificed. For dentistry to reach its just and proper eminence we must not depend alone upon the operations performed at the chair or in the laboratory, but as "doctors" we must be "teachers," and so educate, not only our patients, but the public, and especially *mothers*, that the teeth will be properly cared for, and kept in a healthy condition.

In the discussion of the paper,

Dr. J. T. Stewart said, that such a pamphlet as that suggested is what every dentist daily feels the need of. Such instruction is needed, and we are the ones to impart it, but we have not the time to give a course of lectures on dental hygiene to each and every patient.

Dr. C. L. Boyd thought there could be no objection to a pamphlet so endorsed, and if done by the Association it would tend to elevate the profession in the eyes of the people. If we endeavor to teach them how to prevent the damage we are called upon to repair, it will show the world that we are not working solely for the dollars, but that we have the good of humanity at heart. That dentistry does not consist merely in the repair of damages, but that we offer the means of prevention as well as of relief. It is desirable to enlighten the people in these matters, and to clear away some of the mysteries of our profession. Dr. Boyd suggested that a committee be appointed to work up this matter, and that the pamphlet include a formula for a safe and reliable dentrifice—a substitute for those nostrums now relied on by those who do not go to the dentist unless driven by suffering, but who do wish to have their teeth clean.

Dr. W. G. Browne said that the Georgia State Society had in preparation a pamphlet of this kind, but that even with that we would reach only those whom we would reach and teach in our offices. The general press is the medium through which to reach the general public. In this way we would reach the general public. Your home paper will always be ready to accept terse, well-written articles on any subject of interest to the public. In this way we would reach those who read the paper and who go to the quacks and charlatans because they read their advertisements in the papers. If you desire to reach your patients, Mrs. Walker's book "Letters to Mothers" will teach them all they need to know about their children's teeth, but if you want to reach the general public, you can only do it through the press.

Dr. W. H. Morgan said that such literature had been before the public for many years. When he first took possession of his dental office he found on the centre-table two pamphlets, written by his partner, entitled "Quackery Unmasked" and "Hamlin on the Teeth," but he could not find that they had had much effect upon the public. A similar work was published many years ago by J. W. White, a most competent man. Our friend, Mrs. Walker's book is excellently well adapted to its purpose—the instruction of mothers. But a dentist or a dental society, cannot issue such works without violating the code of ethics. The violator of the code could justly say—they do not allow me to advertise; they won't consult with me; they won't admit me to their society, but see how they are advertising!

It at once puts you on the defensive, which is a false position. White's book was issued as a matter of trade—large quantities were sold. He was not a dentist. He, as also our friend Mrs. Walker here, had the right and privilege of issuing such publications, for the good they hope to do, or for the profit there may be in it, but it is not the business of a professional man.

Dr. Morgan disclaimed the possibility of giving to the public a formula for a dentrifice that would be adapted to every case; there are so many varying conditions to be taken into consideration.

Dr. Boyd replied, that while it is true that we do have to prescribe different mouth-washes and tooth-powders to our patients who come to us under widely varying conditions of oral and dental disease, yet there are many who never go to the dentist and yet who desire to keep their teeth clean, and for that purpose simply, a safe and reliable formula could, he thought, very wisely be included in a pamphlet designed for the general public. He thought that such a pamphlet, freely distributed among the people, would arrest the attention of many, and stimulate a desire for better conditions of the mouth and teeth. There are many, of course, who do not know, and these we could not reach, but we who do know these things are the ones to teach them if the proper method can be found.

Dr. Morgan said, you cannot teach the people to practice dentistry at home. You say it is necessary to teach the preservation of the deciduous teeth? One severe case of toothache in the family will do more teaching than all your pamphlets? One acute case of toothache in a little child teaches the parent that something is needed; and one little filling that preserves a tooth without aching until it is shed, convinces them that there is something in dentistry—but by facts, not by theories; not because it is publisbed in the newspapers.

Dr. J. Y. Crawford: The fundamental principle of ethics is always the same. If it is right and advisable to instruct the public in the technicalities of one science it is right and advisable in all. Teach them that professors of no matter what, are *reliable*; that they know their business; that is all the public needs to know. It would be useless to teach them dentistry, or to teach them the principles of either law, theology or medicine. The good accomplished will not repay the efforts made.

Dentistry has been in existence, in a broken line, for over three hundred years, and yet the combined influence of all those years has not been strong enough to teach mothers that the first permanent molar comes in at the age of six years, and that when lost it will not be replaced by another. If a child of five years presents with serious disease of the baby molars, and I determine the conditions are amenable to treatment and endeavor to defer extracting until the sixth-year molars have erupted and are in occlusion—if the tooth aches, and the mother still wants it out—how far will she have to go to find some one ready to take it out? We don't agree among ourselves, even on the cardinal points, and the people find it out, and they say—"you don't know anything about it yourselves, you don't agree with each other, and if one is wrong, the other may be right." Dr. Crawford exhibited some casts in demonstration of statements made by him two years previously, but which were received with doubt, to the effect that one of the most prominent factors in the abnormal retention of the superior baby cuspids, is the premature extraction of the baby molars in the opposite jaw.

Of Dr. Morgan's argument, he said, the logic of one successful operation is more convincing than all the arguments in literature. The logic of facts is irresistable. One filling that lasts for years speaks more than volumes, and in a language that the patient can understand. He said that one of the rules that ought to obtain, is that every child born into the world ought to have the services of a dentist from the eruption of the first tooth throughout life. The adjudication of the question, whether or not the very large infantile mortality is due to dental irritation—is it, or is it not, is a life-and-death question, and one in which we have a more weighty responsibility than any other class. I wish I could drive it home to your consideration; I am one of those that believe any departure from normal lines in tooth-evolution and tooth-eruption *is* largely responsible. Dentition is a physiological function, but alas! it is not performed physiologically in this age and country. Would to God that tooth-evolution was in accordance with nature's laws.

Say to the American people, that no child should be allowed to live with dental decay in the mouth. No parent is excusable for permitting it. Say to mothers, you have nothing more important to perform towards your child than to have this disease eradicated ; it grows rapidly ; it will injure the permanent teeth.

As for a dentrifice for popular use. If the mouth is perfectly healthy, water—pure as that for baptism—is all that is wanted, but it is not enough with sordes, carious cavities, inflamed gums. When you are called upon to prescribe a *dentrifice* it needs to be more than merely cleansing, it must be medicinal in its qualities, and you may soon have to change your prescription. The system gets inured to a certain drug and it is the same with a dentrifice.

Dr. A. S. Billings, Omaha, Neb., thought it very desirable for every dentist to have in sight, some means of instructing and interesting in the care of the teeth—not the patient who has sought you—but *the friend* who sits and waits. Give it to them to occupy their time and their attention while the patient is in your hands.

Dr. Williamson. If the dentist loves his patients ; if he loves the little folks ; if he loves the ladies who brings the little folks to his office, should have exactly such printed matter ready when questions are asked on these subjects. He has no time to tell all they are glad to know. If a child has the toothache the parents also lose their rest. If they are working people they cannot afford this, and knowing no better they have the tooth extracted—the unfailing remedy and the only one they know of. Men go round in dump-carts offering to pull teeth cheap and without pain, and they are glad to get it done. If they don't know any better it is because we have failed in our duty of instructing them.

There being no paper on

ETHICS,

Dr. J. Y. Crawford was requested to open the discussion.

He said dentistry is purely an ethical profession, because it is in accordance with the best interests of the human family. Ethics, from a broad standpoint covers the whole course of conduct, in all walks of life. When a young man leaves an institution of learning, he should feel that his first great aim is the support of all institutions that are for the good of humanity. In politics he should feel that it is his ethical duty to cast his vote for the man he deems best fitted for the place—as much his duty as to testify truly in a court of justice—for the good of his country, his people, and himself. He is born under these obligations. When a young man receives his diploma, whether in word or not, he voluntarily assumes the obligation to do *what is right* in all his professional obligations, as truly as though he had placed his hand on the Holy Evangel. In entering into these professional obligations, he proposes to confer benefits on humanity, and unless he wholly lives up to this, he violates his highest moral obligations. If he wilfully and knowingly, for the sake of gain, violates the code of ethics of his profession, he does wrong, and the evil will find him out. Whatsoever a man soweth, that shall he also reap.

Dr. H. D. Boyd. The simplest definition of ethics is this, "Whatsoever ye would that men should do unto you, do ye even so to them." Deal with others as you would be dealt by. There is no broader, deeper, truer definition of ethics than this.

A paper entitled—

A few Facts about Aluminum,

Was read by Dr. Thos. P. Hinman, Atlanta, Ga.

In this paper Dr. Hinman gave a brief history of aluminum, its chemical qualities, its uses in the arts and manufactures, and in the scientific world, and particularly its use by the dental profession, for crowns, bridges and plates, for which it is in some cases preferable to gold, on account of its great compatibility with gum tissue. A great drawback hitherto to its more general use has been in the ability to solder this metal, but experiments are being made in this direction, and Dr. Hinman stated that he had recently received a sample of aluminum solder, combined with the proper flux, from the Wilmington Dental Manufacturing Co., with which he had made a very perfect union between crowns, and also between straight edges of aluminum plate. He has not as yet, however, tested the wearing qualities of the solder between crowns for bridge-work in the mouth, and was unable to say how it would be acted upon by the fluids of the mouth. For single crowns, made by the Morrison Seamless crown method, he has thickened the cusps with amalgam worked very dry, these crowns giving perfect satisfaction.

Dr. Hinman also uses aluminum foils in vulcanizing rubber plates, giving a smooth, polished finish without the discoloration resulting from the use of tin foil. Also, as a matrix for amalgam or cement fillings; being very soft, it is readily shaped around around the tooth, and oiling the surface, the filling material does not stick to the matrix.

Alumnol, an aluminum salt of napthol-sulphonic acid is highly recommended by Dr. Hinman as a non-poisonous antiseptic and astringent, having a deeper seated action than the usual astringents, from the fact that the precipitated albumen redissolves in an excess. Alumnol also dissolves in purulent secretions, excluding the possibility of choking up by the coagulation of albumen. For inflamed gums over wisdom teeth it reduces the inflammatiou very rapidly, being rapidly absorbed by the overlying tissues, without any injurious effects. Alumnol may be obtained from Schulze, Berge & Kœchl, No. 79 Murray St., New York.

Dr. A. A. Pearson spoke of the use of Dr. Carrol's aluminum foil for filling teeth. He said that he thought to improve it by rolling it with gold foil, and in this way it makes a very beautiful filling. It wears well, the secretions of the mouth have no effect upon it; the filling has a greyish tinge, more like the natural tooth color than anything he had ever used. But in every instance it subsequently gave rise to very severe pain. This is not the case when aluminum foil is used pure.

Dr. W. G. Browne uses aluminum for crowns for those who cannot afford gold, as being much better than large amalgam fillings. No matter how poor the patient may be, if he can afford anything in the way of dental services he can afford an aluminum crown, they are so quickly and so cheaply made. He makes a seamless crown with a "Morrison" outfit, strengthening the cusps with amalgam worked very dry. In stamping the cusps he uses, instead of the small shot supplied with the outfit, a lump of wax with cotton over. This placed in the blank and stamped into the cusp die gives a beautiful bulging contour to the crown and perfect cusps.

Dr. H. B. Whittington showed some bridges made with Weston's metal, using rubber plate teeth, which are attached in pouring the metal. For molars he uses gold caps.

Dr. T. M. Allen, in swaging aluminum plates places tissue paper on both sides of the aluminum, preventing "leading." When the plate is finished he puts it in a pickle of pure sulphuric acid. This bleaches it perfectly and gives a beautiful frosted appearance, though perfectly smooth. For cast plates he uses the Fenner furnace, the aluminum furnished with this furnace in ingots, having but very little shrinkage.

Dr. Crawford said that, for crowns, the thickness of metal necessary to use was objectionable, making the crown cumbersome. He considers aluminum the best material for lower plates, swaged between dies of Babbitt's metal, making the plate not thinner in any place than 18 or 20 Stubb's gauge. For swaging the plate he gave his method as follows: Having an accurate impression, make a sand mould and metal die as usual. Then spread a sheet of paraffin wax over your plaster model, covering it exactly as you would with your aluminum plate to fit the mouth. With this wax-covered model make another sand mould, another metal die, and your counter-die.

For swaging your plate use the die first made, and the counter-die made after adding the wax. If the old way of swaging a plate was worth ten dollars, this way is worth one hundred. Every lower plate made in this way has given perfect satisfaction. Aluminum is not good for an upper plate as it bends. Aluminum is very kind to the mucous membrane and will not cause recession and absorption of the alveolus.

(To be continued.)

COMPILATIONS.

THREE CASES OF SEPTICÆMIA OF DENTAL ORIGIN.

BY W. D. MILLER, A.M., PH.D., D.D.S., BERLIN, GERMANY.

Many cases of death from blood-poisoning resulting from a diseased condition of the teeth having been reported of late, it might appear that the dental profession had become so well aware of this possible result of the neglect of the teeth as to render reports of further cases unnecessary.

I take the liberty, nevertheless, of presenting the following cases, for the reason that one of them in particular is doubly interesting, in that it shows how bacteria associated with an abscessed tooth may be carried by the blood to other parts of the body, and give rise to metastatic processes of dental origin.

CASE 1: Boy 9 years old, said to have been ill for ten days, and suffering at the time of admission from an abscess on the right lower jaw, which discharged large quantities of pus externally as well as into the mouth. Two days subsequent to the appearance of the abscess, the boy fell in getting out of bed, causing a bruise of his left thigh, followed by considerable swelling and redness.

Status praesens: Boy pale, highly feverish (39°); right cheek much swollen in the region of the lower jaw; a fistula upon the neck, from which drops dirty, brownish pus. The jaw itself feels hard and putty-like; fluctuation indistinct. Several very carious teeth in the right lower jaw are loose in their sockets and surrounded by pus. The mouth can be opened but little, speech being difficult and indistinct. Tongue thickly coated, *fœtor ex ore.* On the left thigh, particularly in the middle and lower region, a conspicuous swelling, distinct fluctuation, especially above the internal femoral condyle; skin tense, no redness, strong dilatation of the veins; knee slightly bent, very painful; pulse very frequent (160 a minute), small; great excitement and diuresis, sleeplessness and lack of appetite.

Following day: Temp. 40.3°; pulse 160. Operation:

1.—Under ether narcosis.—The abscess is opened by an incision over the internal femoral condyle, and a subperiosteal cavity, the size of the fist, discovered, filled with thin fatty ichorous pus, which has the same odor as that which escapes from the abscess of the jaw. The kneejoint is not penetrated, and no point of suppuration or fistula leading into the bone can be discovered. Counter incision on the outside of the thigh, drainage, tampon.

2—A long incision along the border of the lower jaw lays open the abscess. The whole jaw proves necrotic and bathed in pus. The right tempo-maxillary is opened. Extraction of several loose teeth; tampon.

Following day: High fever; bad general condition; pulse between 160 and 180; no ague. Bandage. Femur cavity dry, but profuse pus around the jaw. Sleeplessness. The next morning, early, death ensued under increase of the symptoms.

In the pus of both centers a peculiar capsule diplococcus was found, similar to the coccus of sputum-septicæmia. Examination of the blood, negative.

Diagnosis: *Periostitis actua mandibulæ dextrae, et femoris sinistri.—Sepsis.*

The abduction showed the organs without pathological changes, excepting a slight *pleuritis fibrinosa* on both sides, and an abscess as large as a cherry, on the inferior lobe of the right lung, under the pleura, filled with ichorous pus like that of the other cavities.

Case 2.—Patient: Woman 40 years old. Extraction of second left inferior bicuspid on account of painfulness and swelling. On the following day, the swelling not subsiding, an incision was made through the gums by a physician. Notwithstanding the escape of a large quantity of pus, the condition of the patient grew worse, requiring another physician to be called in.

Status on the evening of the second day: Considerable swelling of the left lower jaw, extending upon the neck; swelling very painful; gums and mucous membrane exceedingly œdematous; many carious teeth; *fœtor ex ore.* Patient taken to the hospital and immediately operated upon (incision externally at the fluctuating point). But little pus escapes, Temp. 38.5°; pulse good. Next day, pulse more frequent; temp. sinks to 37.5°; collapse; relative euphoria. Third day after the extraction, death from sepsis. Shortly before death infusion of salt.

Case 3.—The following case was reported in No. 63 of *Zahnärztliche Rundschau*, 1893;

The patient, a merchant's wife, 42 years of age, had long suffered from toothache, but did not seek the advice of a dentist until profuse suppuration had set in. The dentist extracted the tooth and advised the patient to seek the advice of a surgeon immediately, since the ulceration of the upper jaw had progressed so far that there was imminent danger to life. For fear of an operation, however, the patient put off the visit to the surgeon till the following day. The incisions made having no effect in staying the progress of the disease, she was taken to a hospital where a more extensive operation was performed, which likewise proved in vain. Blood-poisoning having set in, death speedily followed under frightful tortures.—*Dental Practitioner and Advertiser.*

ALL SORTS.

The Use of Belladonna in Mouth Affections.—The *Revue Odontologique* states that in certain affections of the mouth, such as hemoplasia, mercurial stomatitis, syphilitic placques and ulcerations, where cauterization is used to combat the disease, its effects are hindered by a hypersecretion of saliva that rapidly eliminates the resulting eschar. In order to overcome this H. Kobner, of Berlin, recommends the use of a belladonna mixture as follows:

℞.—Extract belladonna . . .	30 centigrammes,
Laurel water	5 grammes,
Water, dest.	10 "

A half hour before cauterizing the parts (by means of the galvano-cautery, thermo-cautery, or with nitrate of silver), twenty drops of the solution should be given the patient. This dose should be repeated in two or three hours and if necessary from ten to fifteen drops on the following morning. The belladonna checks the excessive flow of saliva, the eschar remains intact and the affected parts heal rapidly.

Calculus Growth Within the Tonsil.—The *Revue Odontologique* cites an interesting caso of calculus within the tonsil. The subject, arthritic, aged 72 years, had complained for some months of difficult déglutition accompanied by pain that was localized on the whole of the right side of the throat.

On examining, the right tonsil was found to be as large as a pigeon's egg, violet red in color and hard, protruberant and painful to the touch. It had the appearance of a round ulcer, but when pierced by the point of a bistoury it felt hard and stony and no point of contact of the bistoury gave rise to capillary hemorrhage. At the level of border the bistoury entered freely between the foreign body and the tissues of the tonsil. By means of scissors an opening was made at the edge of the growth, large enough to permit the removal of the calculus. In appearance it was black and as large as good sized mulberry. When completely dessicated it weighed 1 gr. 60.

Van Woert (F. T.) on Inoculation of Pyorrhea Alveolaris.—I wish to make a confession, to establish the truth of the theory that we can inoculate pyorrhea alveolaris. I made a plate for a lady six or seven years ago, and she presented herself te me in eighteen months for a new one. She had, at the time I made the first one, two superior canines. They made a disagreeable, ugly looking mouth, and I wished to extract them, but she insisted on leaving them in her mouth. When she presented herself the last time, I thought to myself that here was a good chance for an experiment. The gums were healthy, the teeth were healthy, but they should be removed, and as I had two or three marked cases of pyorrhea on hand at the time, I thought I would try and get rid of them by indirect means. I told her there were a few deposits that I would have to remove, and I went to work with pyorrheal infected instruments, that were covered with septic matter. I can show you by my books that she soon had a full denture, and the canine teeth were taken out with my thumb and finger. When I first related this I was taken to task for it. I will admit it was a direct case of mal-practice, but it was justifiable. The cause of science demanded it. I wish I had two or three more such cases, and I would do it again.—*Practitioner.*

Goble (M. D.) on A Good Root Filling.—I have a good thing on root filling, with a record of its use in 300 cases, covering two years, with not an instance of inflammation after filling, nor one failure. It consists of

Chloroform	℥ ss.
Gutta-percha	
Rosin	āā ʒ .

M.—Ready to use in two or three days.

Take an 18k. gold wire filed down to a hair point; wrap a fiber of of floss silk or linen lint around it. Dip in the chloro-percha rosin, and pump it well into the nerve canal. Then force into the canal a gutta-percha point. Pack it down, and your nerve canal is not only filled moisture-tight, but gas-tight, and the apex and mouths of the tubuli are sealed tight. You have filled the canal with one of the best antiseptic preservatives.

In cutting open a root that has been filled for months and lain in ink for a week, you will find no discoloration of the surface of the canal, and you have a greenish crystalline substance firmly adhering to its walls and no shrinking of the filling, as there is with chloro-percha, and no gas pits, as there is with gold, tin, or lead.—*Extract Items.*

Cunningham (E. P.) on Death from Use of Cocain for Tooth Extraction.—I wish to inform you of a death produced by the injection of cocain for the extraction of teeth.

It occurred in the office of a dentist of this place to-day. He is an excellent dentist and a man of thirty years experience. The solution was taken from a formula recommanded by, and published in the January number of the *Dental Practitioner and Advertiser.* I was summoned to the office with physicians soon after the toxic effects were noticed to be serious. The Dr. had injected about 10 min. of the solution, and had extracted two badly-decayed molars, when the patient complained of some weakening effects. The usual toxic effects produced when too large a dose has been administered, as you understand much better than I do. All known restoratives were administered, but with no effect.

The Dr., I can assure you, is a careful man and a student of your friend, I believe, Dr. Brown, of Fort Wayne. I write you the facts of the case thinking it may interest you, and to prevent any false publication. The patient was the Cashier of the First National Bank, and a man who had long been a sufferer from rheumatism, and is about fifty years of age. I desire that no responsibility be thrown upon the dentist, as he was not to blame. Some valvular heart trouble has also been diagnosed by his physician, from which he has also suffered.—*Register.*

Megnesium Hydrate.—The use of an antacic is frequently indicated in the mouth in cases of acid secretions, erosions, and other like pathological conditions. For these we have for a long time been using precipitated chalk, limewater, and other such preparations. A friend lately sent us a bottle of Phillips' Milk of Magnesia, and this has now taken the place of all other alkalies.

The use of magnesia as a laxative, or mild cathartic, in the form of effervescent citrate, or as Epsom salts, is too well known to need comment. But there are certain inconveniences attending its employment, such as the danger of forming insoluble concretions in the bowels, through its precipitation from the compounds in which it was an element. In its present form it is a complete hydrate, and hence is not subject to precipitation by the neutralization of any of the ingredients which hold it in solution as a compound.

It is pleasant to the taste, and if a teaspoonful be taken into the mouth at bed-time, and rinsed about until it comes in contact with the teeth, it will form an antacid coating which will remain for some time, thus materially increasing the benefits to be derived from it: There is no preparation witin the sphere of our knowledge which is so useful in acid erosion of the teeth, and it should be prescribed freely in all such cases. It may be used subsequent to cleaning the teeth after each meal, and should certainly be employed at night and morning.—*Practitioner.*

Chip Blower for the Dental Engine.—The great delay in the preparation of dry cavities by the accumulation of *debris* led Mr. Weiss to put together this simple means of disposing of the same, and was briefly described. Beneath the treadle of the engine is fixed a valved india-rubber ball, from which passes a tube, following the standard and arm to the hand-piece, the latter part being provided with a two-way stop-cock which directs the current of air from the ball beneath the treadle to within half an inch of the cutting bur. The tap of the stopcock enables the current of air to be diverted to the side when not required for the cavity, preventing any accumulation of air when not in use. The engine hand-piece is in no way rendered clumsy by this addition, for although the caliber of the tube is large, to prevent a needle-like blast, it lies conveniently along the side. Mr. Weiss explained that he had tried various means to heat the air, but owing to the rapid radiation of the heat along the tube, in spite of a large spirit lamp a metal ball and spiral, no perceptible increase of temperature was obtained. Another feature which led Mr. Weiss to discourage the use of heated air was that the patient did not complain of pain from the current of air; in fact, he proved slight obtunding properties in its use. He always commenced the preparation of the cavity without the air current, and turned it on when the *debris* commenced to accumulate. The ease with which the defective tissues could be watched, and the cutting of grooves facilitated, placed this little machine among one of the most useful additions to our already well supplied wants. Where the electric motor was used, the ball could be placed on the floor, and from time to time pressed by the foot.—*Transactions Odont. So. Great Britain.*

Hinman (T. P.) on An Expeditious and Accurate Method of Grinding and Fitting the Logan Crown.—It is a well known fact that the improved Logan crown is the best porcelain crown upon the market. The great objection to it is in the fact that it is a mere matter of guess work when they are ground to approximately fit, for we never know when they fit by the old process.

Having this before me, I have originated a method by which to expeditiously and accurately grind them to a perfect apposition with the abutment of the root to be crowned.

First prepare the face of the root to be crowned as desired, and having selected a suitable crown bend the pin, if necessary, so as to make a proper alignment.

Next place a piece of parafin wax around the pin next to the porcelain, then take No. 60 tin foil and trim a disk a little larger than the abutment; then pierce center of disk with the crown pin, pushing disk down until it touches the wax, place crown on the root and force it to place, the wax driving the tin foil disk to a perfect apposition to the abutment of the root. Remove crown with the wax holding the tin foil disk in position, and with a pair of sharp-pointed scissors snip the edges of disk slightly all around. Place a small pellet of wax on end of pin, then insert pin up to the porcelain in quick setting plaster; after plaster hardens warm crown and remove, the snipped edges of disk serving to hold it in position; clean off wax and replace crown on model and you have a perfect metallic surfaced model of the abutment of the root to which to grind, with a perfect view of every surface of the root, the wax which was on the end of the pin allowing it to penetrate the plaster as the porcelain is ground away. By this method a Logan crown can be made to fit perfectly in ten minutes and no guess work. Try it once and you will be more than satisfied with the results obtained; this is also applicable to the bicuspids.—*Busy Dentist.*

Sherman (W. B.) on A Case of Cocain Poisoning.—Miss C., presented for extraction of right upper third molar. One-half grain of cocain was dissolved in fifteen drops of a one per cent. aqueous solution of phenic acid, and one-half of this liquid was injected bucally, and the remaing one-half into the palatal gum. Before a half minute had elapsed the patient had lost consciousness, and, within a like time rigidity of the whole muscular system seemed complete, so much so, that any working of the respiratory muscles was imperceptible and death from suffocation seemed imminent. A hypodermic injection of ether was made at once, as the heart had become reduced to 45, and following this, a like injection was made of aromatic spirits of ammonia. Galvanism was made use of at once, the positive pole being placed upon the side of the neck, and the the negative upon the leg above the knee, as it was impossible to reach the unciform cartilage, owing to the hands and arms being in a state of rigidity over that part. The opening and closing of the current produced the desired artificial respiration, but within a minute after its application also produced intense spasmodic and inordinate action of all of the muscles, so much so that the patient was placed upon the floor for safety. Both the respiration and circulation improved however. The muscular spasms increased both in length of duration and violence, and great exertion was necessary to prevent self-inflicted injury to face and eyes. The pupils remained normal. It was deemed advisable to use morphine, and an injection was made of the usual amount with atropia. The contractions continued up to three hours after giving the morphia and then gradually decreased in number and length until the patient came from under the influence of the narcotic. Great depression resulted, with a confused state of the mind for three or four hours, after which a rapid restoration to normality was had. Artificial respiration was necessary during the narcotic sleep, the chest movements being imperceptible many times.

The amount of cocain introduced into the system equaled fifteen minims of a two per cent. solution, a very moderate dose. The patient had been and was in good health, of a strongly bilious temperament, with nervous attributes markedly wanting. Mention is made of the small dose, the celerity of action and the severity of results.—*Pacific Coast Dentist.*

McCandless (A. W.) on Attaching Porcelain Facings in Crown- and Bridge-Work Without Exposing them to Heat.—I have been asked to explain the method of attaching porcelain facings in crown and bridge work without exposing them to heat, and thus avoid the possibility of checking them. These inquiries have been so numerous that I decided with your permission to make one answer do for all by publishing it in the *Review.*

The porcelain face should be slightly beveled all around the edges and pure gold twenty-eight to thirty gauge is the proper material for the backing as it is soft and stays to place. In the process of fitting the backing the gold should be annealed often, then burnished and tapped with a riveting hammer to position. This will give an accuracy of adjustment that is not approximated by the man who is satisfied to solder his backings, and who never checks a tooth. After the backing is thoroughly well fitted, proceed with the work as in the ordinary method, but after the backing is waxed in proper position to the other metal parts of the crown, and before investing for the soldering process, slip the porcelain facing off. Cover that portion of the backing that comes in contact with the porcelain facing, with a paste of plumbago and water, allowing it to pass into the pin holes of the backing, invest as ordinarily and proceed with the work just as if the porcelain was in place, After the soldering is completed take a spear-point drill, using oil for a lubricant, and bore out holes in the solder for the pins of the facing, the holes in the backing being the guide as to where the pin holes should be. Now countersink the pin holes, or what is perhaps still better, simply make the holes a little tapering with the large end of the taper nearest the free end of the pin. Place the porcelain face on the backing with a film of cement between, invest the facing in sufficient bulk of plaster, which when hard gives a splendid back or support for the facing during the riveting process. This latter may be accomplished by a smooth end plugger-point about as blunt as the end of the pin, being tapped gently by the hand-mallet, or more rapidly perhaps by the mechanical or pneumatic mallet.

Of course any number of crowns may be attached in this manner in bridgework, and the porcelain facings being adjusted after the soldering is all done there is absolute assurance that there are no weak sisters among the members.

There are two other reasons why riveting facings is far preferable to soldering, one of which is the relief from anxiety and worry lest while the case is being heated, soldered and cooled a check *should* appear.

Nearly all men admit that sometimes they have had teeth check, and if they are conscientious in their work and in their desires to produce the best and most perfect results, they never solder a case without this dread.

The other reason is the artistic results obtained. The perfection of the joint between the tooth and backing is not approached in a solder case, and besides, in a solder case the blue line is nearly always visible at the neck of the tooth to disappoint you, and the color of the whole facing may be changed. There are other arguments to be used in faver of this method, such as greater perfection in flowing the solder just where you wish it to go—especially on the labial side of the band which needs contouring to restore the original shape of the root. Solder may be flowed over this to any extent desired. To be sure if a man does not cut the root down to where it ought to be before banding it, he will not find any necessity for this step.

I claim that it has been proven that the riveting plan is better than soldering for many reasons, and that progression is only made by discarding old methods for new when the new ones are demonstrated to be better. The man who does not do this is not living up to the possibilities within him, and is therefore not doing his duty to himself or to his patients.

"Do your best, your very best and then your best will better grow."
—*Extract Review.*

Regnault (F.) on Variations in the Form of Teeth among the Human Races.—We know the importance of the teeth for the purpose of zoological classification; nevertheless, the variability in the form of the teeth among the human races has been little studied up to the present. One of the most remarkable is that of the incisor. With the negro, the lateral sides diverge from the roots towards the lower extremity, in such a manner as to give the tooth a conical form; while with the white man the lateral sides tend to become parallel, and its form is at times rectangular.

With the assistance of M. Azoulay, I have measured the teeth belonging to the crania in the Paris museum, and those in the collection of the Société d'Anthropologie, taking the difference of the widths of the lower portion and of the neck of the tooth; we have found this difference on an average to be 1·27 mm with Hindoos, 1·61 mm with Europeans, and as high as 2 mm with Australians, 2·19 mm with New Caledonians, 2·39 mm with negroes. These inferior races approach in this respect the monkey, with whom this difference reaches 3·04 mm. In exceptional cases one observes among white men teeth which approach those of the negro, and *vice versa.* The dental prognathy permits the development of the lower portion of the incisor of the savage. But this explanation cannot be given in regard to the milk incisor of the child, which even among the whites offers in a constant fashion similar characteristics. The neck of the incisor is very compressed, and widens all at once to form the crown. The difference is 1·8 mm between the width of the free-lying portion and that of the neck, a difference which is more considerable than in the adult white, although the tooth itself is less voluminous. This form of the incisor of the child appears to us to be due to the considerable alveolar space, which the jaw can here afford for the teeth. If we examine the human canines we see that they enlarge equally from the neck to the crown, and this difference is greater among the inferior races: negroes 2 mm on an average, Australians 1·9 mm, New Hibridians 2·2 mm, while among Europeans it is but 1·5 mm. In this manner the canines of the inferior races would appear to differ more from those of the monkey than the canines of white men. In reality the comparison must be made from another point of view. The canine of a monkey is in the form of a poignard, its maximum width being at the neck; it then becomes thinner, and terminates in a point. In man's canines three [is also a point, but it only constitutes the lower extremity of the crown; the upper portion, which enlarges where the neck ends, is peculiar to it. Thus if we compare the acuteness of this point in the various races (in subjects where the canine is not worn, for in that case the canine has an edge and not a point), it will be seen that in general the acuteness is more pronounced as the race is more inferior. In reference to this, we draw attention to the canine of a Tasmanian in the museum, where the point is extremely acute. The comparison becomes more interesting still if we compare the deciduous canines of monkey and man. Their morphology is nearly alike. Both possess a rudimentary body, and a point, which constitutes almost the totality of the crown. As with the other teeth, so with the molar; the crown is wider relatively to the root in the inferior races than in the superior. This difference, which is only 1·8 mm among whites (16 whites), rises to 2·6 mm among negroes (18 negroes) in the first upper right molar.

With a gorilla (5 gorillas) this difference in the same tooth is only 2·6 mm, but in this animal's case it must be noted that the first molar is lese powerful than the second and the third; with man the reverse is the case. This difference reachet 3·8 mm in the second molar.

With the New Caledonian (number 21), the second molar is sometimes larger and often equals the first; but here the molars are only rarely in a growing progression.

Thus, if we take the dimensions of the neck and of the crown, we see that these teeth have their development chiefly in the crown.

Comparing the upper second right molars of the Bengali, and of the

New Caledonians, we observe that the neck measures 7·5 mm in the Bengali, 7·9 mm in the New Caledonians, which gives only a slight difference of 0·4 mm in favor of the latter; while the Caledonian has a crown 9·8 mm in width, as against 8·6 mm in the Bengali's tooth, giving a difference of 1·2 mm. This enlargement of the second molar constitutes certainly a simian character.—*Translated from Revue Odontologique.*

SOCIETIES.

Michigan State Dental Society at Ann Arbor, June 6-9, 1894.

INDIANA STATE DENTAL SOCIETY.

The Indiana State Dental Association will meet Tuesday, June 26, 1894, at Lake Maxinkuckee, Ind., for a three day's session. All are invited to attend.

The State Board of Dental Examiners will meet at same time and place. G. E. Hunt, *Secretary.*

UNIVERSITY OF BUFFALO, DENTAL DEPARTMENT.

The second annual commencement exercises of the Dental Department of the University of Buffalo, were held in connection with those of the Medical and Pharmacal Departments, in Music Hall, in the city of Buffalo, on the evening of Tuesday, May 1st, 1894. The examinations before the Board of Curators (comprising the State Dental Examining Board), took place during the day, and at the close six candidates for graduation were recommended to the Chancellor for the degree of Doctor of Dental Surgery, which was accordingly conferred upon them.

The session opened September 25, 1893, and closed May 1, 1894, after a full term of seven months. The number of matriculates was eighty-six. The next term will open September 24, 1894. A. P. Southwick, *Sec'y.*

The commencement exercises of the Northwestern University Dental School, Chicago, were held April 24th. Graduates numbered 24.

THE American Dental Society of Europe will hold its nineteenth meeting at Geneva, Switzerland, Aug. 6th, 7th and 8th, 1894. Dast year this annual gathering was omitted as many members wished to attend the Columbian Dental Congress. American colleagues who may be taking a summer vacation are cordially urged to combine with their plans for travel and sightseeing a visit to their professional brethren in Europe and to join in the various exercises of the occasion. Members of the profession everywhere will be welcome. Program may be had on application to the President, Dr. L. C. Bryan, of Basel, or to the undersigned,

GHAS. W. JENKINS, *Secretary*,
No. 1 Sonnenquai, Zurich.

OUR AFTERMATH.

BE sure and attend the Northern Ohio Dental Society at Put-in-Bay, June 19-21.

DIED—RAWLS.—At his home in Lexington, Ky., on April 22nd, Dr. A. O. Rawls. The Doctor having been indisposed for a time, for relief took chloral and in such quantity as to prove fatal. Deceased was 52 years of age.

MARRIED:—Bigelow—Gassaway. At Toledo, Ohio, May 7th, 1894, Mr. C. S. Bigelow, one of the firm of The Ransom & Randolph Co., was married to Miss Margaret G. Gassaway. Congratulations and best wishes are extended them.

NEWS NOTES FROM COLUMBUS.—Yesterday, May 9th, the senate passed a bill which had previously passed the house, called the "Lane" bill, which has for its object a more definite meaning of the term "reputable" as applied to colleges of dentistry.

The same prescribes at least three years of study of not less than six months in each, a curiculum including the usual branches and that every institution thus engaged must have property in buildings and equipments either owned or leased representing not less than $5000. I suppose the primary object of the bill is to prevent the springing up of so-called colleges, sometimes built of straw, with no responsible support and more or less detrimental to professional interests.

The provisions of this act seem to me fair, and tend toward the advancement of dental science, as it will in the future be taught in our colleges.

O. A.

THE

OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

DENTAL EDUCATION.*

GEO. H. WILSON, D.D.S., CLEVELAND, O.

In a paper upon Dental Education, read before the Cleveland Dental Society, and published in the June number of the OHIO DENTAL JOURNAL, we endeavored in a cursory manner to give a general idea of manual training, and its application to dental education.

While we confined ourselves to prosthetic technics, we gave reference to articles upon operative technics, which I believe cover the ground, so far as they have been written upon. I am aware that one desiring to criticise the technic method would say that it is devoting too much time to the practical, at a sacrifice of the intellectual side of our profession.

We would reply in the spirit of the quotation in our former paper, from Prof. Sabin, that there is no intention or desire to lower the intellectual standard, only add that which will give life and energy and enable the mind to comprehend and retain the theories taught, because there is something tangible as a foundation. We do not propose that more time shall be given to the practical

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* Read before the Northern Ohio Dental Society, June, 1894.

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than is usually set apart for that work, but that the time shall be used in a systematic and comprehensive manner.

Much has been claimed in the past for the manual dexterity of the American dentist, but it is very apparent that all has not been accomplished that is desired. When we see the work of some of our recent graduates, and for that matter some grown gray in their profession, we say "verily we have not attained unto perfection."

The class and lecture room can not be replaced by any other method of teaching. They should be arranged so as to moderately tax the strength and mind of the average student. The lecture should be so prepared and freighted with knowledge, that the average student can appropriate and assimilate it. They also give an opportunity to impress upon the student the fact that the instructor is more than a task-master; to enthuse the student to become a thinker and an investigator; to propound and explain the theories upon which his studies are builded; to give him a broad basis for his future code of ethics, for he must and will have an unwritten code, that will dominate him.

In our universities we have professors of art; our finest artists are not chosen for these professorships. Very few, if any of them, would be capable of filling the position; nor is it necessary that the professor should be expert, with the implements with which the works of art are produced. If he is a third rate artist, that is well; but he must be educated; he must be well informed in the history of art, from the remotest period to the present time. He must have an analytical and a philosophical mind, and he must be able to teach others, what and how to see the beauties in the works of the men of genius.

The lecture room is the place to teach the *art in dentistry.* A technic student may be able to construct a beautiful mechanical substitute, but he has no assurance when it is placed in the "human face divine" there will be symmetry and harmony, and not a "libel upon God's handiwork." This work and so much more, must be taught in the lecture room, that there is very little danger that too much time will be devoted to this purpose.

Dr. Hugh B. Mitchell, of the class of '94, has so nicely expressed my idea of dentistry, in a statuette which he modeled and presented to the dental department of the W. R. U., that I wish to describe it. It is the figure of a man seated upon a rocky pinnacle, the highest within his reach. In the uplifted right hand he holds a flaming torch, signifying that what light he has is around and about him, and free for all. The left hand rests upon a tablet, upon which is written the words "The Art inclusive of Arts." To me the face is the most expressive. A broad expansive forehead, just enough sternness of the mouth and eyes to admirably express that *intensity of purpose*, that knows no ultimate failure. How true it is that the qualities that are required by the masters of many of the arts, as modeling, sculpturing, and painting, are demanded of the truly skillful in our chosen profession. Such qualities as a fine appreciation of color, symmetry and harmony, outline and contour, and much of the technics. If we add to this the technics of many of the trades, we have something of an idea of what the young man is supposed to have acquired in the short space of three years.

A question that very much interests a young man contemplating the study of dentistry is :—shall he spend a year or two with a preceptor before entering college?

I say most emphatically, no. He can not get a just return for his time. But, you say, he can learn to polish plate work ;—certainly, but in his technics, he will have just so much work to do, and in the end, the inexperienced young man will be just as capable as the one with a few months office training, each having the same natural ability.

A proprietor of a tooth shop once called my attention to a boy of eighteen years, whom he informed me, he had taken from the streets and taught to grind up a set of section teeth in fifteen minutes. What a terrible lesson that boy would have to "unlearn" in the schools, when it is quality, and not quantity, that is most appreciated. The rapidity of execution will always take care of itself, as the young man's practice increases. The capable men in the profession will not take a student and fit him for practice ; they can not afford to do so.

We will suppose that Dr. Good, in the kindness of his heart, has yielded to the importunities of Chas. Greene to take and teach him so he will be as capable as the average graduate from the modern dental college. Dr. Good is a skillful, painstaking, conscientious dentist, and proposes to be as systematic in his work as the schools. To give Charles an equal training to the school, in taking impressions and making models, would require the doctor's personal attention for forty hours. Now, let us count the cost to the doctor. We will say that his time is worth $5.00 an hour, but we will suppose the doctor is attending to his own work and accomplishes one half as much as he otherwise would. Forty hours at $2.50 per hour, is just $100.00, the amount it has cost the good doctor to teach his student in this one department only; for three weeks. What has he received in return for this expenditure of time? He has had his cuspidores cleaned, if Charles does not declare that that work belongs to the janitress, and the doctor himself. Can the doctor afford such liberality?

Your reply that Dr. Holmes says that the very term "doctor" means to teach, and we are under obligations to teach. Yes, in a consistent and economical way. You remind me that the Genius of Dentistry, I described, is represented as letting his light shine free for all.

I must reply to such a construction upon the idea of a free education that only the most mercenary of beings will take the crust away from the poor man's child; and the Book of books informs us we are not to cast our pearls before swine.

Let us look at the subject from the student's standpoint. A young man thinks it would be profitable for him to spend a year with a dentist before entering college; he succeeds in getting into an office with a good man, and gives his time and possibly pays a hundred dollars for the privilege. The probabilities are that that young man will bank upon the wonderful advantage he has over the green-horn, upon his entrance at college, and will not awaken to the truth of the situation, till the inexperienced young man, from his zeal and energy at the start, will be far in the lead.

At the time of graduation, the first young man has spent four years, the second, only three year's time; now, if the second youg man will engage himself to a first class practitioner for six months or a year, it will certainly cost him no more than before he entered college, and he will be in a position to receive ten times the benefit from his private pupilage. So I say, private pupilage after graduation rather than before.

There are some questions that is well for the profession and the faculties to consider together. As first, I would mention the length of the college year; I believe that nine months is best, and eight months should be the shortest time accepted. My reasons are that three years of six months are inadequate to the demands. The six months between the terms are lost time; only a few can find positions with competent instructors, and then the change of teachers, and the habits acquired are apt to be detrimental. A student is necessarily at considerable expense while acquiring his education, so I contend it is the duty of the college to make his time as profitable as possible. I opine that the majority of students are not given to professional study, during the interval of closed college doors. The vacation, which should be designed for mental and physical recuperation, results from the prolonged inertia in mental retrogression and much time is required to retrieve that which is lost. The moral side of the long vacation should also be considered. A young man can not expect a six months vacation out of every twelve, when he enters practice, yet we have been cultivating a taste for such. Most of our students are ambitious, and the temptation is very great to enter into illegal practice, and defy the laws of the state. Just the thing an American citizen should be above doing; yet we pray "lead us into (away from) temptation."

There is one argument in favor of the short term, that seems quite plausible; that is, that many of the students have to earn their way, and they could not do that with a short vacation. It may seem a hardship to such, but I can assure these worthy young men that the majority of men that succeed in any vocation, have had obstacles of one kind or another to surmount. If it is necessary that twelve months shall be used for earning money, would it not be better to take a year before beginning college work, or devote one year to that work between terms? It is very evident that more time must be required, and if the term is not lengthened, a year will be added, and that means increased tuition fees.

Our next question is: Shall four years attendance at college be required for graduation? In the presentation of this question, as throughout the whole paper, I desire to be understood as speaking from an individual standpoint; not as the mouth piece of any organization, or association, and I only, am responsible for any unacceptable statements that may appear. This desire not to shirk the responsibility has prompted me more often to use the personal pronoun "I," than I would otherwise.

I am most decidedly opposed to the four year's course, *per se*, but I am most emphatically in favor of raising the standard of admission. I am so convinced that the literary, college bred man, provided he has pursued a suitable course, of which we will speak later, can and will accomplish as much in two years as the grammar school graduate can in four years. It is unkind, unjust and enervating to the young man of mental training, to have to lumber along at a snail pace to accommodate the young man, worthy but not capable. It would be just as reasonable to say that the professional man of ability and reputation, who can command fifty or one hundred dollars a day, for his services, shall be treated as equal to and satisfied with the same compensation as the ditch digger, whose labor is worth as many cents, although the laborer may be just as faithful to responsibilities and just as honest; in other words, as worthy as his better endowed brother.

So I believe we should seek a better class of material rather than to spend more time in trying to teach those who are not prepared to receive and appropriate the instruction given.

Another question is: Who shall enforce the dental laws? Many think the college professors are under obligations to do this work. From the very nature of their position, they should be required to abstain from all such complications.

A worthy young practitioner recently complained to me that an under graduate was practicing in his town, and that the college should look after him. Is it not apparent that the college faculty is not an executive body, in the sense of enforcing the state laws? Who gave the faculty authority over the personal acts of the students? Certainly no one but the student himself, and he, only within the college walls. The only punishment the the college can inflict is a refusal to teach him. Surely the college requires moral rectitude, and if the student proves to be a prevaricator, kleptomaniac, fornicator, or intemperate in any respect, it has jurisdiction to the extent of expulsion. What would be the result if the teachers should constitute themselves executors of the laws? The result would be that just the ones that should go to the colleges, would have a natural resentment for their persecutors, and if compelled to enter the schools, they would never give their hearts to the work; but if the college men hold entirely aloof from all entanglements, and confine themselves to their work of teaching, these incompetents would enter the colleges as they would go to a friend, to help them in time of trouble. Then the colleges can say, "yes, my boy, in your ignorance you were committing a more grievous offence than you were aware, but now you are started right; if you will give us your hands, brain, and heart, we will do our best to make you an honorable man before the whole world,—to make you a man among men, in your chosen profession."

Another complaint reaches my ear from another graduate, for whom I have the utmost respect. He says he has spent three years and several hundred dollars in preparing himself, and as he opens his office, another young man opens an office just across the hall, whose only qualification is that he has spent three months with another incompetent; so the young doctor thinks the college should be under obligations to protect him. It is no wonder that this apparent injustice calls forth an expression of righteous indignation.

The logic of the foregoing citation will apply to this case, and then our innate gentleman forgets, only for a moment, the objects of his college training. To comply with the law, was only an incidental consideration. His main object in entering the school was to be honest to himself, honest to his patient, and last and least, honest to the laws of his country.

If both the student and the college have been faithful to their contract, the young man has received the full measure of that for which he sought,—breadth of intellect, manipulative ability, and character, in the ratio to his inherent ability; that which no man can take from him—the jewels that stamp him a professional gentleman.

I sometimes think that any professional legislation is an insult to the good sense of the community. It is certainly true that any man, like water, will seek his level. As it sounds a little utopian to intimate no law, we will waive the point, and ask the question: Who shall enforce the law? Certainly not the dental faculties, or professional societies, as such, but organizations or committees, created for that purpose; or individuals on their own responsibility.

A question that has been somewhat discussed in the past, and probably will be more in the future, is, "Who shall make the final examinations, and grant the degree?" I am in favor of that power being invested in a Central Board of Examiners.

A question that expresses "a long felt want" by all of the schools of to-day, (and I believe possessed by none) is a liberal endowment fund. There is no reason why the dental schools should not be as well equipped as any other educational institution, and every argument in favor of endowment for other schools, would apply with equal force to the dental.

In closing this paper, I desire to give tersely my idea of a model dental college of to-day, and also an idea of a possible college of the near future. Our medical friends can help us in this. The University of Michigan has contemplated a six years course, and at the end conferring the B.S. and M.D. degrees. This implies that the applicant is prepared to and does enter the literary department, and that his time is economized. One illustration will suffice to show an advantage in this. A course could be mapped out in chemistry, that would have a definite object in view, that would probably require no more time than the usual course in the literary department, and would give the general training of the one, and the specific knowledge of the other, or if there was time, a much more elaborate course could be pursued.

The Western Reserve University has just announced a six year's course. An applicant for the degree of A.B. can by pursuing certain studies in the medical department during his fourth or senior academic year, receive the M.D. at the end of the sixth year.

In times past, there has been a serious obstacle in the way of of a man of high literary attainments making a successful operator in any of the departments of surgery. It is an acknowledged fact that youth is the most propitious time of life to acquire manual dexterity. In the old methods of education, the hand, as a means to education, and incidentally, an education of the hand, was entirely ignored.

To-day, with our endowed universities, making possible thorough laboratory training, in the various departments of science, and with the previous manual training in the public schools, the student has every faculty cultivated. So my ideal course for to-day, would require the applicant to be a graduate of our best high schools; comprising a thorough manual training course; as but few high schools are equipped with manual training accessories, I would require that all applicants that had not pursued this course, should be required to attend a manual training school for one year, and then present a certificate from the superintendent, stating that the student was proficient in manipulative ability.

If such a scheme was adopted, it would probably require that certain manual training schools should be interested and a special course prepared for high school graduates that were deficient in manual training. This plan would have more advantages than one. If the young man was hopelessly deficient in manipulation, this one year would so inform him, and then in the choice of his life's work, he would exclude all those vocations where manual dexterity was an important factor.

Then again, this preparation might demonstrate to him that some other of the arts was more compatible with his organization, and the world be more benefitted from his new found position. I would have this young man enter an endowed institution having a three year's course of not less than eight months. I would require that this institution be thoroughly equipped with complete technic and laboratory courses and facilities, a well-filled museum and library, and a faculty in which each man is not only an expert, but is in love with his department.

I believe the time is ripe when our leading institutions can adopt this ideal course, and in a very few years, require the academo professional course of six years.

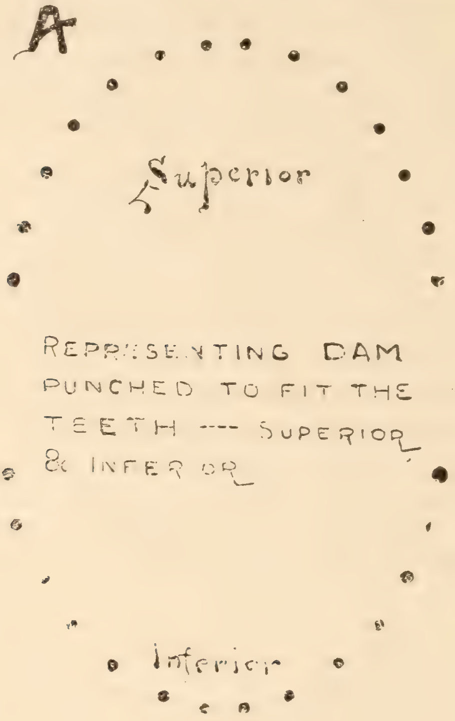
THE USE OF RUBBER DAM IN SCALING TEETH.

BY HENRY BARNES, D.D.S., CLEVELAND, O.

THE following method was suggested by the appearance of the tartar when the dam was applied for other operations upon the teeth.

A suitable piece of dam (Kleinert's No. 2 preferred, because of its superior quality) is punched with holes sufficient to expose all the teeth except the second and third molars, superior and inferior, as follows: (Some cases will permit of exposing the second molars.) See diagram "A."

The holes should be punched sufficiently far apart so that the dam will extend loosely over the gum septum, and will allow of its being forced down around the tooth cervix, the dam is now applied and ligated as follows: See diagram "B," The ligature crossing on the lingual surface, and never tied on the superior teeth, for the reason that it is less painful, and does not injure the gum tissue. The ligatures on the six anterior inferior teeth should be tied and the ends left long so that the patient may hold the ends and thus keep the lower lip out of the way. Now with


A
Superior
REPRESENTING DAM PUNCHED TO FIT THE TEETH --- SUPERIOR & INFERIOR
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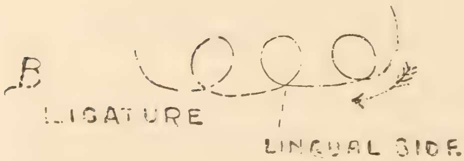

a thin bladed instrument, a cycle scaler is held in the left hand to press away the rubber, the tartar may be seen and completely scaled, not only on the labial and lingual but also on the mesial and distal surfaces, after which the usual method of polishing may be employed.

A strong solution of sodium peroxide to moisten the pumice, furnishes a very good agent to cleanse the surfaces and remove the stains.

ADVANTAGES.

The gum tissue is not lacerated as is often the case with the usual method. The tartar is exposed to view and may all be removed at one sitting.

Debris is not thrown into the mouth and there is not the constant annoyance of interruption to cleanse the mouth of blood and debris.

The teeth may be thoroughly cleansed before removing the dam and when done we have the satisfaction of knowing that it is done, which is not the case with the usual method.

It must be borne in mind that this method is not for those cases which are thickly encrusted with tartar, but it may be used even here, after the mass is removed, to complete the operation. Neither is it to be used in all other cases, for the shape of the teeth in some, will prevent, but in those cases where it is possible to apply the dam, it will afford great satisfaction.

A good way to punch the holes in the dam, is to cut a piece of tagger's tin to about the shape of the arch and then double it in the center. (Several sizes may be made to suit the different cases.)

Now double the dam and place within the tin and punch through the holes in the tin.

The question may be asked—"Is this not going to be a great deal of trouble to cleanse the teeth?" I answer "Yes," but "Whatever is worth doing at all is worth doing well."

DENTAL DOTS.

BY D. V. BEACOCK, D.D.S., BROCKVILLE, CAN.

IODINE and aconite are two useful articles in every dental office, especially when mixed together and used on the gums as a counter-irritant, to abort an abscess, etc., I find that the crystals of iodine don't dissolve as readily, as when I use a little iodide of potassium with the mixture.

In case of cocaine escaping on a portion of the mouth or tongue and causing symptoms of loss of taste or stiffness, use a solution of alcohol or whiskey to dissipate.

A little glass, such as used for holding matches, or small tumbler, half filled with small shot, makes a very handy little article for holding burs and drills, I find it saves considerable time and trouble by selecting out the ones that I may want for any case just previous to commencing, an operation and placing them in the little shot-receptacle, instead of having to look over a well filled bur-rack, then when the patient has left the chair, the holder containing the dirty instruments can be taken into the laboratory, cleaned, sterilized, then replaced in their proper places in the bur-rack. In this way none are ever forgotten or overlooked in the cleaning process.

In case of an accidental burn from carbolic acid, apply strong vinegar, or a weak solution of acetic acid. Should carbolic acid be accidentally swallowed, use a strong solution of sulfate of soda, which forms with carbolic acid a harmless mixture.

In using nitrate of silver, should an accident occur, use common table salt in solution, to wash out the mouth.

A soapstone slab, such as is sold by hardware dealers for foot warmers and pancake cookers, is a very good thing for heating rubber, previous to packing. They heat quickly, retain the heat for a long time, and the rubber does not stick to the soapstone.

A very handy laboratory apron is made by taking a piece of stiff brass wire, an eighth of an inch thick and about two feet long, bend it in a curve to fit round the neck, cut out a piece in your apron to fit the neck and allow the two corners to hang over the shoulders. Hem the cut edge as if you were going to run a drawing string or tape through, but instead of doing this run a brass wire through. A good sized glass bead or a piece of shellac stuck on the ends of the wire completes it. The wire should be long enough to allow the ends to pass each other two or three inches at the back of the neck. This apron can be slipped off and on without tying or untying, no tossing the hair by having to slip the string over the head, etc. You have simply to open the ends of the wire, slip them under the chin and it is secure.

THE ALABAMA DENTAL ASSOCIATION.

(Special report for OHIO DENTAL JOURNAL, by Mrs. J. M. Walker.)

Continued from page 284.

DENTISTRY, PAST, PRESENT AND FUTURE.

By J. T. WATSON, Lapine, Ala.

In this review of dentistry, going back not further than the early days of the older among living practitioners, Dr. Watson said that their choice was limited to non-cohesive gold or tin foil for filling, or *extraction* for decayed teeth, with gold plates for those who could afford them. Then came vulcanite-rubber plates and amalgam fillings, the blessings of the poor and a boon to the poor operator.

In the dentistry of the present, all this is supplemented by cohesive gold for the many cavities where soft gold is not available, the cements for teeth of poor structure, gold crowns where the work of decay is too extensive for fillings, and bridge-work instead of the roof-covering partial plates of *the past.*

The writer concludes that the highest point has been reached in *the present* in the line of filling materials and artificial substitutes, and that the work of *the future* lies in prevention rather than cure—the means of preventing decay of the teeth and diseases of the mouth; this is the great subject of scientific research for the future generations of dentists.

DR. WM. CRENSAW said that though many operators seemed to take pride in saying they never use amalgam, yet many of the best operators do use it, and consider it the best thing there is in certain cases.

DR. CRAWFORD condemns the use of amalgam *in toto*, allows it no place in the teeth under any circumstances. He said—What is a decayed tooth! A local manifestation of disease. It is just as important as any other disease. Would a physician compromise on a remedy for a disease because it is cheap? He said, it costs me eight or ten dollars in cash daily to espouse the cause I do; I could make thirty dollars with amalgam as easily as twenty with gold. I am a poor man, but I would rather die a pauper than have a bank account due to the use of amalgam. Among the charges made against amalgam as a material for filling decayed teeth, besides the fact that it does not save them, Dr. Crawford believes that it causes pulp-stones, and that it arrests or prevents the absorption of the roots of the deciduous teeth.

Dr. Whittaker said that while he uses amalgam, being forced to it by the character of the community where he is located, yet he uses it under protest, and never when he has the choice of other material. He does not consider it to be relied on for permanent work, amalgam fillings having to be renewed frequently, the tooth working out away from the filling. He said, I am opposed to the use of amalgam, but I am not honest enough to sit down and starve with my family rather than use it.

Dr. L. D. Carpenter thinks that the failures of amalgam, of late years, are due to the manufacturer—that the amalgams used in past years were of much better grade. Another cause of the trouble lies in faulty manipulation. Men think it is a cheap filling; that they will get but little for it, and they take no pains either in preparing the cavity, and plaster the amalgam in like stopping a hole in the wall with plaster.

Dr. C. L. Boyl, protests against the *abuse* of amalgam by poor operators. Any material used by a poor operator will naturally fail, but that is not the fault of the material. In the proper use of amalgam cement should form the base of the filling, carefully trimmed along the line of the enamel, making undercuts in the hardened cement, the first amalgam used should be quite soft, increasing in density till the surface of the filling is reached, the last being as dry as it can be worked, working it in carefully, solidifying it thoroughly. The surface is finished by rubbing it down thoroughly with cotton. If an approximate cavity then pass a strip of rubber dam between the teeth, bringing out all superfluous material; see-saw a piece of floss silk between the teeth to dislodge any excess. Then with a burnisher smooth off any roughness left, and you can give a perfect approximal surface to bicuspids or molars, and such fillings will last very well. In the hands of a careful operator, who does his whole duty conscienciously, amalgam will last as long as gold.

Dr. Whittaker thinks it is the cement in the cavity, and not the amalgam, that saves the tooth filled or described by Dr. Boyd.

Dr. W. H. Morgan thinks that amalgam is to be commended in certain cases. In other cases he might use it under protest. If a child five years old has a premolar decayed, is very nervous and difficult to manage, amalgam will preserve those teeth till nature removes them by the normal process. You can do it with less irritation and quite as effectively as with anything else. Amalgam may fail and have to be renewed, but it will save teeth that could not be saved by anything else. He does not agree with Dr. Boyd in the use of cement under amalgam, though he has used it under gold since 1865. Having less conductivity than gold it can be used with great benefit.

Dr. Crawford replied. I undertake to say that any cavity in a deciduous tooth that you say *ought* to be filled with amalgam, will do far better with tin or gold or both combined. There is enough in this question to demand the attention of the greatest body of the wisest men in dentistry, for months. You don't understand and comprehend the enormity of the thing. We dodge, all along the line, but when we stop short of our most scientific and best work we fail in our most solemn duty. We must not compromise, and patch up with this and that, and put amalgam in the children's teeth to stink and make them disgusting to look at!

In reply to a question as to what he would use for badly broken down teeth, Dr. Crawford replied: fill them with tin, the plastics, or gutta-percha, or you can use the cements, putting it in again from time to time.

In reply to a remark that patients complain that they can't come back that way, he said: If they let their children's teeth get to that point, they ought to have to pay for renewing it every year, and twice a year if need be. The loss of the sixth year molars is the greatest injury suffered by the American people, from a disease standpoint. It has done more harm than all other operations—so help me God—and *amalgam* has not saved them!

AETIOLOGY OF THE IRREGULARITIES AND CROWDING OF THE TEETH, AS GENERALLY SEEN.

Dr. C. L. Boyd, Eufaula, Ala.

Dr. Boyd took the ground that lack of development of the maxillæ is the first potent factor in the crowded condition of the teeth so frequently seen; that this lack of development is due to the fact that bony tissues of the oral cavity get comparatively no exercise, all other portions of the body being more or less exercised from birth on. The tooth germ, or papilla is of a certain definite size; no art can reduce the size of the crown for a tooth. Many portions of the body, as the hands, arms, feet, legs, may be increased in size and development, or *vice versa*, by exercise or lack of the same. The muscles of the mouth, throat and tongue are exercised involuntarily, even at the earliest age, and hence are developed out of proportion to the bony tissues of the jaw, the tooth-germ remaining unchanged in normal size, demanding space which the undeveloped maxilla fails to afford. Hence the crowding or irregularity of the teeth independent of, and apart from that resulting from the second great factor—the premature and injudicious extraction of the deciduous teeth. The incisors being lost too early, the pre-maxillary bones fail to develop fully and there is lack of space for the permanent teeth. If the molars are lost too early the result is a compound oral deformity, the bite being shortened in addition to the crowded condition described.

Dr. Boyd exhibited some casts of children's mouths, illustrating the conditions described. He also outlined a system of what may be termed *mouth-massage*, a systematic, persistent but gentle rubbing of the inside of the infantile jaws by the mother or the nurse, by which he claims the jaws may be well developed as to allow the deciduous teeth to erupt with sufficient proximal space to prevent decay, allowing them to be shed normally with ample room for the permanent teeth. Among the models shown was one of the mouth of a child four years of age, for whom this system had been carried out with marked results, the teeth standing as well apart as is usual at seven years of age, as shown in a model from a mouth at that age. Another great advantage gained by this habitual treatment is that the child is from birth accustomed to having the mouth handled and examined and when the time comes does not object to having the teeth brushed and the mouth properly cared for.

Dr. Crawford said that he could not accept Dr. Boyd's theory. He said, I think the stimulus recommended can easily be carried to excess, and I cannot approbate it as necessary, or as calculated to bring about the results he claims. Yet there is a moiety of truth in it, and it is a pointer in the right direction. You may bring to bear on the permanent teeth an increased dental proliferating action, and induce premature development of the parts. I cannot see how the jaw development desired by Dr. Boyd can be attained by handling without reaching the germs of the permanent teeth also. The teeth have always decayed—prehistoric remains prove that, but it was more virulent then than now. There are complications in connection with the teeth, that become more destructive as civilization advances. Unless we can find the means of supplementing deficiencies in functional activity the danger is greater than we realize.

But as for the idea of an edentulous race, *no*, NO. A long time before that can be evolved, man will have passed from this stage of action.

Dr. Boyd says the prime etiological factors in irregularities are *premature extraction* and *hereditary transmission.* The extraction of the baby teeth has but little to do with it; that only causes deflection. Hereditary influence is at the tail end of the list. Why? Because the conditions have not existed long enough to create transmission. In size and shape of teeth, yes; but not for irregularities in position. The lessening of the diameter of bones, and the change of the relations of individual parts, has not existed long enough to manifest the full force of hereditary transmission.

The influence of civilization and lack of exercise is manifested in the teeth by abnormal sensitiveness of dentine. Normally deciduous dentine is comparatively slight, as seen in the teeth of children living in the quiet influences of country homes, compared with the petted children of city life, in the kindergartens and the primary city schools. They have very sensitive dentine, even in the deciduous teeth, due to abnormal, pathological condition of the nervous system. Normal dentine ought not to be sensitive.

Dentistry ought to be a factor in bringing man back to a normal state of equipoise, moral, mental and physical, a trinity akin to the Godhead. If you do your whole duty you will be factors in a civilization the world has not dreamed of.

DR. BOYD. In naming premature extraction of the baby teeth as a factor in irregularities, I did not mean the mere fact of extraction in itself, but the consequent coming forward of the sixth-year molars, crowding the front teeth. When the first and second deciduous molars are prematurely lost, there is a greater amount to be done by the other teeth, and a shortening of the bite before the sixth-year molars get their growth, and they remain permanently shortened. The bicuspids cannot grow out any longer than the molars, and the result is a deformity of the whole lower face. With a proper development of jaw early in life, both the deciduous and permanent teeth will stand apart, making the bony sockets more dense and you can get a more thorough cleansing of the approximal spaces, thereby preventing decay. Teach your patients this, and to brush the teeth from the gums so that the bristles will pass between the teeth.

Dr. J. H. Cronland, Montgomery, Ala., read a paper entitled

An Original Crown.

For this crown a band is set in a groove cut in the end of the root as near the circumferance as possible. To this a flat cap is soldered and burnished to the end of the root, exactly to the margin. This is pierced for a platinum pin to which is affixed a porcelain plate tooth with gold backing. The porcelain is ground at the cervical end to fit the gold cap, and beveled from the pins to the cutting edge, over which the first backing is burnished. A second backing is added, which is punched full of holes and soldered to the first to give added body and strength. If preferred, a platina cap and backing can be used and porcelain backing baked to the crown, making a very artistic crown. Dr. Cronland claims that this crown is less bulky and more shapely than the old ferrule crown; exposes no gold at gum margin; allows a much more favorable and accurate adjustment with regard to position of other teeth; can be used upon strikingly convergent or divergent roots which are to serve as abutments for bridges; is especially adapted to conically shaped roots, causes less pain in adjustment and will not irritate the pericemental membrane. It is extremely cleanly, as the joint between gold and tooth can be made about perfect.

Dr. Cronland requested that if the special points in this crown have been used by, or known to others, they would mention it, as, as far as he is aware, it is entirely original with himself.

Dr. Stewart said he had seen Dr. Cronland's crowns and considered them neat, clean, strong and serviceable. The band being inside of the root adds strength, prevents splitting of the root, but causes no bulging of the root, necessitating crowns too large in the neck for natural appearance.

The paper was passed without discussion.

Dr. R. A. Rush, Selma, read a paper entitled

The Physiological Relations of the Oral Cavity of the Individual.

Stating as a fact that dentistry is a specialty of medicine—a branch of the healing art, Dr. Rush asks: Does the practitioner of medicine appreciate this fact? Does he recognize the great work we are doing in the prevention of disease, and the still greater work we could do with his more cordial co-operation? When there is proper digestion and assimilation we usually find good health. Mastication and insalivation being the first processes of digestion, a sound, healthy masticatory apparatus is essential. The science and art of the skillful dentist are required to correct the pathological conditions to which the oral cavity is subject—as caries, alveolar abscesses, pyorrhea alveolaris, etc., all of which furnish a home for the disease-breeding microbe. Septic matter from these conditions mingles with the saliva and the food, rendering filthy that which above all else should be clean. If our medical brother appreciates these facts, it becomes his duty, as the guardian of health, to require the mouths of his patients to be put in sanitary condition; and this can easily be done by sending them to their family dentist.

Viewing the subject in the light of my experience, says Dr. Rush, I am constrained to believe they do not appreciate these facts. Dr. Rush then cited several cases, in which oral conditions had been entirely ignored, saying, if the physician knows these facts, (and he *should* know them,) he should simply say to his patient, I cannot treat you with any hope of success until you have visited your dentist and your mouth put in a thoroughly sanitary condition. In conclusion he said: Does the physician, as a rule, appreciate dentistry as he should? I do not believe so, for if he did he would not howl so about the sanitary condition of the city and yet try to treat a patient mercifully while the mouth is full of carious teeth, alveolar abscesses and other pathological conditions, which render it a habitat for those germs which science has proven are deleterious to health.

In the discussion of this paper Dr. Crawford took the position that the dental profession itself is responsible for the lack of information on dental subjects, on the part of the general practitioner. While diseases of the oral cavity, due to dental complications, alveolar abscesses especially, are constantly met with and ineffectually treated by the general practitioner, yet one may rarely see the dentist attending the meetings of the local medical society, when he might confer and receive benefits. Diseases of the eye are far less general, yet we find the ophthalmologist present in every society, reading papers on glaucoma, cataract, and other opthalmic troubles comparatively rare in comparison with alveolar abscess, antral diseases, etc. It comes with poor grace from a dental surgeon to criticise the mistakes of physicians, in the diagnosis and treatment of oral diseases, while we hide our light under a bushel. They have had no instruction in dental pathology. They have never been called upon to make diagnosis or to perform operations along that line. Compare the value of the human race, of dental surgery and opthalmic surgery. Dentistry is the only department that touches the human system from one end of the line to the other. There is no other brand *save one* that reaches every individual. We must all be born, and we all have teeth, but we don't all go blind or deaf; we don't all have tumors—but we all need the services of the dentist.

No child that is born can go properly through life without the services of the dentist. The most liberal, the most intelligent and the most eminent members of the medical fraternity hold and believe that in many of the complaints and diseases of infancy it is necessary to call us in consultation to see if the trouble is not of dental origin, or due to dental complications. I hope yet to see in every medical school one member of the faculty whose duty it shall be to teach what the people need in dental surgery, and what dental surgery comprehends. The paper is far-reaching and will assist in placing dental and oral surgery on the basis it is entitled to occcupy, instead of being relegated to "tradesmen" in the eyes of the general public.

Dr. W. H. Morgan said, Yes, physicians and general surgeons do need to be instructed in oral science, but our friend is mistaken when he charges on the dental profession this lack of knowledge.

We have not "hidden our light under a bushel." We have been prolific in literature; we have text-books in the language of every civilized nation; these are at the command of medical men. Our institutious of learning are open to them. We are open and free and frank, and ready to impart our knowledge.

In the early days of our history, when we sought to attach ourselves to medical colleges they said—"no, we can't carry you; it would be too great a load." It is not so many years since one said to me—"We don't see what use you have of physiology and anatomy. We honor your desire for knowledge as an elegant accomplishment, but you really have no need of this in your mechanical trade!" But later, another said to me—"Some of of you claim that men will become edentulous; well, if that is to be so *your* profession will be wiped out, and more than half of *ours* will be wiped out too." So true is it than half of all disease depends on diseases of the oral cavity.

I have no unkind feelings towards the medical prpfession. No man can know a thing until he has learned it. Medical men know only what they are taught in medical colleges. We have all seen very serious mistakes made by them, because they were not learned what we are taught. If intelligent physicians would take us by the hand and say—"Come and see such a patient." But no; this system of ethics wards off all but the M.D. But their foundations are being broadened and they like to have *Dental Departments* in their institutions.

Dr. Rush said—We have in Selma as fine a corps of physicians as can be found in any town of its size. They often send patients to me. We attend their society, read papers and assist in discussions, but we are not admitted to membership without the M.D.

Dr. G. W. Rouman said that the constitution of the State Medical Society permits only associated membership, but that in his own community their relations were very cordial.

Dr. T. M. Allen said he was often called in consultation and invited to assist in operations involving oral surgery.

Dr. Crawford. You all have in your local medical practice men who would readily extend the courtesies of reading papers on the pathology and etiology of oral diseases. Then they would look into the principles involved, and you would bring them to see that there is something in dental science, and instead of treating cases and attempting to perform operations for. which they are not prepared, they would say—go to your dentist, this is a case for him. We want to establish our relationship with them, not for the sake of advancing theories, but for the good of the people. You can give them information and you can receive help from them.

DR. MORGAN. I can say *amen* to all of that. In this country every man is valued at his full actual worth. The members of the medical profession are generous and liberal and willing to accord to every man all he deserves. There is no need to *demand* recognition. We will *command* it when we deserve it. Whenever you find in a community an intelligent corps of dentists and an intelligent body of medical men, you will find mutual respect and confidence.

DR. CRAWFORD. I congratulate Alabama on its coming full recognition! Dental science is the best and the most efficient ally medicine has in combatting and protecting from charlatanism. Liberality promotes humanity.

The subject of a charter for the Association was discussed at some length, and a committee appointed to secure one at once. This is especially important to the Alabama Dental Association, as the Board of Examiners is appointed by the Association and therefore depend upon the existence of the Association for its own continuance.

Any dozen men in the State could get up a dental society, secure a charter and have the appointment of the Board.

There was a lengthy discussion as to the publication of the transactions. It was decided to have them issued in a special volume as heretofore.

OFFICERS ELECTED FOR THE YEAR 1895.

DR. H. D. BOYD, Troy, *President.*

DR. O. C. FARISH, Camden, *First Vice President.*

DR. H. B. WILLIAMS, Evergreen, *Second Vice President.*

DR. S. W. FOSTER, Decatur, *Secretary.*

DR. G. M. ROUSSEAU, Montgomery, *Treasurer.*

Dr. H. D. Boyd is one of the four survivors among those who assisted in the organization of the Alabama Association twenty-five years ago, and one of the two who still retain active membership.

The retiring president Dr. T. M. Allen, and the re-elected treasurer Dr. G. M. Rousseau, have never missed a meeting since they joined the Association.

The Association adjourned April 13, to meet in MOBILE, the second Tuesday in April, 1895.

IOWA AND NEBRASKA STATE DENTAL SOCIETIES.

(Special Report for OHIO JOURNAL, by Alvin Patten, Omaha, Neb.)

FOR the first time in the history of the two state dental societies of Iowa and Nebraska, a joint session lasting four days was held by them in Omaha, commencing Tuesday, May 1.

About 75 dentists were present from every part of Iowa and Nebraska and attended the meetings. President T. F. Skeede of the Nebraska society called the meeting to order and Mayor Geo. P. Bemis of Omaha delivered an address of welcome. Dr. J. T. Abbott, of Manchester, Ia., responded to this in behalf of the societies.

Retiring President T. L. James, of the Iowa association, made a brief address.

Dr. H. J. Cole, of Norfolk, Neb., read an essay upon "Shrirer's Remedy for Treating Pulp Canals." He dealt with the subject in a careful manner, and in the discussion which followed he clearly outlined the benefits to be derived from using sodium potassium in the treatment.

At the evening session Dr. W. F. Roseman, of Fremont, Neb., read a comprehensive paper on "The History and Progress of Dentistry in Nebraska." A paper by Dr. J. A. Duffenbacher, of York, Neb., was read on "General Anæsthetics." The doctor in very determined language expressed his distrust of cocain and nitrous oxide gas, and advocated the aerial hypnotic invented by Dr. Hayes, of Pittsburg. The hour was late and but a limited discussion of the subject took place.

Wednesday morning was devoted by the respective societies in separate session, to the election of officers for the new term, and routine business. As a result of the Nebraska 18th annual meeting the following officers were elected: President, H. W. Shriver, of Omaha; Vice-President, W. A. Ivory, of Wayne; Secretary, J. S. McCleery, of Beatrice; Corresponding Secretary, Dr. Hueston, of Nebraska City; Treasurer, H. J. Cole, of Norfolk. Dr. J. C. Whinnery of Omaha, was elected to serve three years on the Board of Censors. Norfolk was decided upon as the next place of meeting. The report of the committee on the enforcement of dental laws started a discussion as to the formation of a state dental board for the examination of dentists coming to the state to practice, such as is now existing in Iowa. The matter was finally laid over without action.

At the 32d business meeting of the Iowa society, the following officers were chosen: President, J. S. Kulp, of Muscatine; Vice-President, E. L. Brooks, of Vinton; Secretary, F. T. Breeme, of Iowa City; Treasurer, A. R. Begun, of Des Moines. Iowa City was selected as the next place of meeting, and at that time the new dental building of the State University will be dedicated. Two members of this society were expelled for unprofessional conduct. They were J. G. Hilderbrand and S. P. Van Lackum, of Waterloo. Both of these are dental graduates but have been getting out flaring advertisements not in keeping with the code of ethics. It was recommended that J. T. Abbott, president of the Iowa State Board of Examiners, be the choice of the society for reappointment by the Governor.

Both societies decided to attend the joint meeting to be held during 1896 by Missouri, Colorado and Kansas at Excelsor Springs, Mo.

Adjournment was taken at 10:30 o'clock by both societies, to unite again for clinics.

The most popular clinic held was that by J. A. Deiffenbacher, of York, Neb. J. B. Garver, an Omaha man, was in the chair, and Dr. Dieffenbacher illustrated upon him the use of aerated hypnotic, for the painless extraction of teeth. The doctor in explaining stated that he had used the method for two years and believed it to be absolutely harmless, with many advantages over gas. The patient in defining his sensation said that his whole system seemed in a semi-paralytic condition, that he knew and understood everything that was going on and that there was no sensation sustained by him when the tooth was extracted. The dentists expressed considerable satisfaction over the result, and claim some faith in the new preparation, which has not as yet been introduced very extensively in the west.

Dr. A. B. Freeman, of Chicago, illustrated a process of his own discovery whereby a tooth can be excavated without pain to the patient. The doctor has prepared a syphon, by which means the patient continually pressing a rubber bulb can dry out the cavity and also pump in a preparation of absolute alcohol.

In another chair a Richmond crown was successfully adjusted by D. P. Sims, of Lincoln, Neb.

Dr. George Nason, of Omaha, illustrated his manner of placing a gold crown.

Dr. S. R. Patten, of Omaha, put in a contour gold filling, showing the method of using simply hand pressure.

The afternoon session convened at 2:30 o'clock.

Dr. C. N. Johnson, editor of the *Dental Review*, Chicago, was liberally applauded for his essay, "How best to Study, Read and Write Dental Literature."

Dr. W. W. Vance, of Kearney, Neb., followed with a paper upon "Electricity as applied to Dentistry." He called attention to the uses which it could be put to for running the lathe and engine, and also showing a few novelties by way of advertising. His theory in this line would be to displace the office boy and have electricity perform his functions.

A paper upon "Dental Chemistry" was read by Dr. R. A. Sherwin, of Edgar, Neb. The doctor was very enthusiastic in his thoughts and believed that dentistry was only half learned unless the dentist had at least a fair idea of chemistry. He called attention to the value of chemistry in the department of dentistry.

"Matured Thought" was the subject of a paper read by Dr. I. P. Wilson, of Burlington, Ia. He desired to convince the dentists of the necessity of being thoroughly familiar with a subject before attempting to talk about it, and also be convinced by a second thought before performing an operation. The discussions on these papers brought out no new or important facts.

At the evening session Dr. A. O. Hunt presented a paper, entitled "A Case in Oral Surgery." The case referred to was of a woman patient who the doctor had treated very successfully, and constituted a form of lock-jaw. The cords seemed drawn, allowing the patient to open her mouth but a small fraction of an inch. She had been in this condition many years and food had during this time been crowded through a very small opening. The case had been operated upon three times before unsuccessfully. Dr. Hunt described minutely his operation with a knife upon the muscles, leaving the person in full possession of her maxillary powers.

Dr. Wm. O. Kulp, of Davenport, Ia., read a paper treating upon "Pyorrhœa Alveolaris." He advocated strongly constitutional treatment together with local applications.

The dental code of ethics was read by Dr. D. P. Sims, of Lincoln, Neb., with comments on professional ethics in general.

The dentists adjourned at this point to accept an invitation to witness an exhibition run by the fire department.

Thursday morning's session was devoted to clinics. The dentists were late in getting together and only half of the work laid out on the program was accomplished.

The use of kalium natrum for treating infected root canals was shown by Dr. A. W. Nason, of Omaha.

T. E. Deveraux, of Fort Dodge, Ia., illustrated a contour gold filling.

George Nason, of Omaha, placed a gold crown.

A live nerve was extracted by Dr. L. K. Fullerton, of Waterloo, Ia., with the use of cocain, alcohol and carbolic acid hypodermically.

G. W. Miller, of Des Moines, Ia., showed his way of making gold inlay.

F. P. Webber, of Cherokee, Ia., exhibited numerous dental curiosities and relics.

President Skeede exhibited a cast taken in Chicago from the jaw of a St. Louis negro. It is four inches across and the teeth are comparatively large. Another specimen which he showed was labeled "Effects of Christian Science upon an Ulcerated Tooth." The specimens are two large pieces of necrosed bone taken from the jaw of a prominent Nebraska Woman's Christian Temperance Union woman, who employed a Christian Scientist to treat her tooth for four weeks before coming to Dr. Skeede to have it out. When the tooth was extracted these two pieces of necrosed bone came with it, and still the doctor says the woman had the temerity to state that she never would have lived through the ordeal if it had not been for the science healer.

The afternoon session was devoted again to papers and essays. Dr. J. J. Grout, of Rock Island, Ia., read the first paper, entitled "Care, Retention and Extraction of Deciduous Teeth." The discussion upon this subject brought out the fact that doctors are too ready in many cases to extract a deciduous tooth. Dr. Grout advised that dentists give more care and attention to deciduous teeth in early life.

"Why Don't We Try?" was the subject of an essay read by Dr. J. G. Flener, of Oskaloosa, Ia.

Wm. H. Steele, D.D.S., of Forest City, Ia., gave the societies some "Useful Hints." He pointed out the necessity of dentists using more care in the selection of material and advised that they use the best. He pronounced aluminum in amalgam as being a fake. Just as the discussion began to warm up somewhat the general alarm of fire was sounded and the desire to see a metropolitan fire so overcame the dentists that an adjournment was immediately taken.

At 9:30 Friday morning the session reconvened to hear the address of the retiring president of the Nebraska society. President Skeede thanked the society for the many courtesies shown him during his term of office, and congratulated its members upon its growth and prosperity since its establishment in 1876. He expressed his pleasure over the results of the Columbian Dental Congress. The doctor closed by reciting an original poem on the first tooth he ever pulled. It was in the head of his sweetheart, who married some other man.

Adjournment was taken *sine die*, after a trip to the smelter works, where about thirty members went, headed by President Skeede.

THE "MISSISSIPPI STATE DENTAL ASSOCIATION,"
AND
THE "MISSISSIPPI DENTAL ASSOCIATION," 1894.

(Reported for OHIO DENTAL JOURNAL, by Mrs. J. M. Walker.)

THE "Mississippi State Dental Association" convened in twentieth annual session at Natchez, May 1, 2, 3, 1894.

The meeting was called to order at 2 P. M. by the President, Dr. Jas. B. Aiken, Vicksburg. The reading of the President's annual address was postponed to the night session, the Executive Committee having arranged for a public reception with literary and musical program, including the opening address of the Association.

At the last meeting of the Association a Committee on Charter and Legislation was appointed, with instructions to secure a charter for presentation to the Association at its present meeting. The charter having been obtained by the committee, was accordingly read at the first session, and briefly discussed. Action upon the charter was deferred till after further discussion.

The Committee on Amendments to the Constitution, presented a thorough revised constitution and by-laws, which having been read, and the reason for the several proposed changes, additions and omissions, clearly and satisfactorily given, the revised constitution was adopted unanimously at a later session.

The program Tuesday night embraced music, both vocal and instrumental, by the local musical talent, including music by the Natchez Orchestral Club, piano, duets and solos, vocal music with violin obligato, a cornet solo and other selections. Dr. Wm. Crensaw, of Atlanta, whose musical talent as an artist on the flute, is almost as well known as his professional skill, was down on the program for a flute solo, and also a flute obligato to a vocal solo, but he unfortunately missed R. R. connection in Jackson. Dr. T. C. West, at an hour's notice, however, took his place most effectively with the violin, of which he is master. A double address of welcome was tendered the Association by the Mayor of the city and by Capt. Lumbert, embraced a valuable review of the rise and progress of dentistry, showing unusual familiarity with the subject for a layman, and evidencing high appreciation of dentistry as a science and great esteem for the personal representatives of the profession whom he addressed.

The response by Dr. Geo. B. Clement, Macon, Miss., was rather a departure from the routine address of the occasion. He spoke of the work of dental associations in securing the enactment of dental laws for the protection of the people from incompetent, law breaking, unprincipled *dental tramps*, begging that those before him familiarize themselves with the provisions of the law and assist in its enforcement for their own protection. He spoke of the progress of American dentistry, and said—

We are proud of dentistry in Mississippi, we are proud of dentistry in the United States, we are proud of American dentistry, because American dentistry leads the world.

I make this statement openly and boldly, yet, not without proof, for it was my good fortune to hear all Europe, Asia, Africa and the isles of the sea acknowledge the supremacy of American dentistry, save Great Britain, and it was this assertion advisedly made that caused old England to officially withdraw all patronage and refuse to participate in the greatest association of dentists ever known in the history of the world, an association represented in person by almost every civilized nation upon the face of the earth.

It was the work of an American dentist to discover and give to suffering humanity the greatest boon since the world began. A discovery by which the unfortunate sufferer may quietly sleep, and dream of the brightest spot in his life while the knife of the surgeon is being steeped in the crimson blood of his body.

American dentistry established the first dental college; American dentistry established the first dental journal; American dentists established the first dental association, and upon this tripod of college, journal and association dentistry has arisen from the common title of trade to the more dignified appellation of profession. And again, American dentistry formulated and put into operation the first dental law known to man. The praise be unto our sister state, Alabama, for this wise provision.

And yet with all this advance, with all the achievements of modern dentistry, we still have men in the profession who are wearing their lives away in the hope of finding something better.

Toiling night and day not only to stop the ravages of disease in the human teeth, but to actually, and successfully prevent it.

Fully recognized by the medical fraternity and in happy union with the same, dentistry is fast reaching that climax of excellency where the loss of a human tooth from either traumatic or idiopathic causes will be a thing of the past.

* * * * * * *

Dentistry in Mississippi has a code of ethics, and while some are unfortunately ignorant of this fact, and others have forgotten it, still I am sorry to say there is another class who are not ignorant of the fact, who have not forgotten it, yet utterly ignore it. This code of ethics is founded upon the golden God given text, "Do unto others as you would have others do unto you," and he who fails to uphold and abide by it does himself an injury, lowers the standard of his profession, and shakes the public confidence.

There is in my mind two little words of old origin but lately united which have done more to thoroughly shake the confidence of profession and people than any other words known to dentistry. These words are "painless dentistry." I ask the question when did this painless dentistry have its birth? Who is its father? A little man, in a little town, in a big state. I ask again, how in the name of common sense can this kind of a human mongrel make a wonderful discovery without sense, without science, without chemical experiment, without laboratory. * * *

It is true there are local anesthetics; this association admits this, but, sir, I am glad to say that if a member of this association wishes to use such a remedy to mitigate the pain consequent to a dental operation, that each and every one is intelligent enough to write out his own formula and thus know what he is using. We condemn all such patent nostrums, and the day will come when you, as a public, will do the same. * * *

And now in conclusion we ask, what does this welcome you extend, this recognition you give, mean? To my mind it demonstrates two things.

First, that we as dentists have traveled adown the rugged path of time, bearing upon our shoulders the once infantile trade, and by energy and perseverance placed dentistry upon a higher plane and present to you to-night an honorable profession.

Secondly, it proves to me that you have the pleasure and privilege to live in this beautiful city, located as it is, upon the bank of the father of waters, amid the rush and whirl of human affairs, have not forgotten the higher nature of man, but that you too have kept pace with the progress of time, and that you are a people of culture, art, science, religion and literature, and therefore not only capable, but ever ready to recognize, welcome and appreciate our every effort to make more perfect the profession we have chosen, thus more fully to perform the duties towards unfortunate suffering humanity. For this cordial, gracious, intelligent welcome I again return the thanks of this entire association, and please remember that wherever time or providence may lead us we shall ever look back upon you and your beautiful city with pleasure.

The President, in his annual address, after the usual greetings, said:

Since last we met, we have passed through one of the most eventful years within the memory of the present generation. The great financial crisis, that, like a lowering cloud, has hung over the civilized world, has cast its shadow upon us, as well as those engaged in other pursuits, though it has not been entirely without its silver lining, nor has it been entirely an unmixed evil.

Manufacturers have brought to their aid all the genius attainable, to produce their commodities at prices to conform to their reduced values, and science, industry and economy have been working hand in hand to adjust the discordant elements in business.

Philosophers and political economists have exhausted their talents in trying to find a remedy for the existing condition, and whilst no remedy entirely satisfactory to all has been found, the result will be that science and art have received an impetus never before experienced in any one year.

The loss has been the stimulus to our own profession. The feverish unrest that has characterized the times has been felt in dentistry as well as in every association of life.

Dentistry is one of those modern sciences that have sprung into existence within comparative recent years, as a necessity of advanced civilization, and to keep it up to the requirements it will be necessary to have the combined efforts of those engaged in its pursuit.

In no way can I conceive of, will it be possible to obtain that combination of effort except through the influence of our colleges and our associations. In order to make them effective, we will have to work in unison and under such regulations as will in our combined wisdom best accomplish the purpose. We have these regulations in our code of ethics and we must see to it that they are observed.

One of the sequlæ of the chaotic condition that has characterized the times and one which calls for our immediate attention, is the insane idea that there is a shorter route to success, than mere patient endeavor. This idea has taken shape the last year or two in the boldest quackery, and I blush to say it, graduates of some of the best colleges in the United States have been boldly advertising Painless Dentistry and all sorts of quack nostrums with an abandon that would astonish a street fakir. That men lacking in professional skill to contest with their competitors should thus advertise their own deficiency is not to be wondered at, but for those who have had the advantages of collegiate instruction to thus acknowledge their inability and utter disregard for professional dignity, is incomprehensible. However, such are the facts and the remedy for this evil is the question.

This question is second only to the financial one to which I have already alluded in difficulty of solution. And like all other great questions of public interest must be solved by the combined wisdom of the many.

I have a few suggestions to make however, which I think will be worth your consideration.

I would suggest that the college of dental faculties formulate a uniform code of ethics for the colleges therein represented, and that the colleges require every student when he matriculates to sign an obligation that he will abide by said code in his future career as a dentist. I make the suggestion that this matter start with the college of dental faculties, as they are perhaps the highest authority, for there is no reason why any college may not adopt this course with advantage. I would then suggest that the associations adopt the same code and obligation, and appoint a committee whose duty it should be to enquire into all violations of the same and publish the code and obligation in the papers in the town where the violations may have been committed together with the name of the person who may have committed the offence.

This would avoid the howl of persecution which goes up when such facts are made known to the public by a competitor in the same town, and this same howl of persecution is not infrequently turned to the advantage of the men who have committed the wrong.

This course would prevent the blame being laid at the door of a neighbor, and perhaps prevent many personal difficulties. We can not, however, expect to discipline our members without some complaint, "No thief ever felt the halter draw with good opinion of the law."

I would suggest that our meetings be held immediately after the meeting of the examining board and at the same place, in order that we may thereby obtain as many recruits as possible from those thus admitted into the profession, and as soon as possible after being admitted. When a young man first starts out in a professional career he is full of hope and good resolves, and it is an easy matter to keep him in line if he starts out under the leading strings of the Association, but if he once goes wrong it is very difficult to get him right.

In order to secure these new recruits it will be necessary to repeal sections two and seven, Article 2 of the Constitution, or go on violating them as we have been doing. Section two reads as follows: The active members shall consist of dentists regularly engaged in the practice of dentistry in the state, of creditable attainments and good moral character. They shall either be graduates of a dental college or have been engaged in the full practice of the profession for the period of five years. Section seven reads as follows: No person commencing the practice of dentistry after this date shall be eligible to membership in this association, unless he shall have received a diploma from some reputable dental college.

Now gentlemen, in view of the fact that under the dental law, the profession is being rapidly crowded in the state, I think it well to remove every obstacle in the way of throwing such restraints around these new acquisitions as will insure the maintenance of professional honor and dignity.

In conclusion, I have a few suggestions to make in the way of legislation, which I hope you will give some attention. There should be a law in our state exempting dentists from jury duty, road and malitia duty. And I would especially recommend that such steps be taken as will bring before the proper authorities the necessity of employing dentists in the army and in the navy.

The entire day, Wednesday, was devoted to clinics, the Association meeting at 8:30 P.M. The first business of the session was the adoption of the constitution as before stated. The next business was the consideration of the charter obtained by the committee. The charter having been granted under the name of the *Mississippi Dental Association*, the word "State" having been inadvertently omitted, legal authorities pronounced that it would be necessary for the charter members to reorganize under the name given in the charter and then to dissolve the old Mississippi State Dental Association, now in its twentieth year of existence.

On motion of Dr. Geo. W. Rembert a committee of five was appointed to draft suitable preamble and resolutions to be printed with the constitution and by-laws with code of ethics, a copy to be mailed to every licensed dentist in the state of Mississippi.

Dr. Wm. Crenshaw, whose name appeared on the musical program, of Tuesday night, having been detained en route by a railroad accident, was prevailed upon to lead Miss Emma Carradine to the piano at the close of the meeting, delighting the members of the Association with two duets for piano and flute, after which the Mississippi State Dental Association adjourned to 11 A. M. Thursday.

Wednesday afternoon, from five to seven, a delightful river excursion was enjoyed by the members of the Association and their invited guests. The weather was fine and the surface of the river was a perfect mirror, so placid were its waters. The boat steamed down the river for some four miles, closely hugging the Mississippi shore. Then crossing over to the Louisiana side it steamed up to the point above Natchez, the passengers saluting the Vidalians en route. Then returning along shore near the Natchez bluffs, the enchanting scenery overhead was seen to the best advantage. The ride lasted less than two hours, the wharf being reached at seven o'clock. The excursionists expressed their high appreciation of the courtesy extended by giving a hearty hand-clap to Capt. O'Brien. Prof. Gloria's string band furnished music for the occasion and some of the young folks indulged in dancing.

The members of the "Mississippi State Dental Association" being also the charter members of the "Mississippi Dental Association," those attending the present meeting, met at 11 A. M. on Thursday to organize under the charter, the officers of the old association serving *pro tem.* The charter was formally accepted and an election of officers held.

Dr. W. C. Walker, Bay St. Louis, was elected President;
Dr. F. H. Smith, Water Valley, Vice President;
Dr. T. C. West, Secretary;
Dr. C. C. Crowder, Treasurer.

The Mississippi Dental Association then adjourned until after the final meeting of the Mississippi State Dental Association.

After a short recess the latter body convened. All bills due by the Association were ordered presented to the Finance Committee, to be audited and liquidated before the dissolution of the Association.

DR. W. T. MARTIN, Chairman of Committee on Dental Chemistry read a paper entitled—

THE EMPLOYMENT OF CHEMICAL COMPOUNDS IN THE MANAGEMENT OF FOUL PULP CANALS.

In this paper Dr. Martin spoke of the difficulties encountered in obtaining access to certain root canals, especially the buccal roots of upper molars, the entrance to which is often obscure and the canal constricted throughout its entire length. Dr. Martin then reviewed the method advocated by Dr. Callahan of Cincinnati, employing sulphuric acid of from twenty to fifty per cent. for softening the osseous structure. The vigorous action of the acid upon the lime salts of the tooth connects the earthy portion with calcium sulphates, forming an insoluble protecting layer over the unaffected parts beneath.

For removing the putrid contents of the canals, chemical compounds are employed, which undergo dissolution when brought into contact with the products of decomposition, the oxygen which is liberated uniting with the effete matter and separating it from that which is vital, and rendering it easy of removal. Of these compounds, either sodium peroxide, followed by hydrochloric acid, or pyrozone in 5% solution, cleansing the canals speedily and thoroughly, placing them in condition fit for final treatment. The judicious employment of such compounds affords a reliable, scientific and practical method of dealing with foul pulp canals, but a knowledge of the chemical nature of these compounds and the manner in which they act, is essential to their successful employment. Their empirical use will generally prove disappointing.

Dr. E. W. Walker, President of the late State Dental Examining Board, next offered

" A Report and an Explanation,"

from the Board. The meeting was held in Jackson, on the first Tuesday in April, as fixed by law. The method adopted in the examinations was that recently promulgated by the Illinois State Board, as published in the *Dental Review*, using also the questions published by the Illinois Board. The method was described in detail by Dr. Walker, for the information of the Association. A special feature in the written papers was introduced, in the use of what is known as the "envelope system." All the papers of each applicant were signed with fictitious name or word, selected from a list of words provided by the Board. The real name and address of the candidate being placed in an envelope together with this sign word, the envelopes remained sealed until after all the papers had been examined and graded and the average of the applicant determined, 80% out of a possible 100 being required to pass the applicant for permanent license.

By this means, all possibility of partiality or personal influence was eliminated, the name of the candidate not being made known until his percentage, under his fictitious name, or sign-word had been ascertained.

Of thirteen applicants for permanent license examined, six reached the required average, two making 95 per cent; two 90 per cent. and two 80 per cent. Of those who failed two made 55 per cent.; four made 50 per cent. and one made 45 per cent.

The six candidates who successfully passed the written examination in knowledge (or theory) were also required to give evidence of their practical skill and judgment, by *clinics*, which they did to the satisfaction of the Board. None of those who failed were graduates in dentistry, though one was a graduate in medicine. The one who obtained the highest average in both written and clinical examinations was a dental graduate. One of the two who attained 95 per cent. on theory was a freshman student! It is of interest to note that in the first examinations given by the Illinois Board under this method, seventeen out of about forty passed, or a little better than 40 per cent. In the Mississippi examination nearly 50 per cent. passed the same examination, under very stringent conditions.

Dr. Walker supplemented his report with an explanation of the causes which had led to resignation of the board in a body, at the close of the examination. Dr. Walker stated that he deemed this explanation pertinent as three of the members of the board had been chosen by the Governor from the members of the Association elected for recommendation to the Governor as competent men to fill that position, the other two members being men of his personal selection.

He said they did not wish to be considered by the Association as lacking in appreciation of the honor conferred upon them in this election by the Association for recommendation to the Governor, nor as having deserted their post; neither were they willing for the Association or the profession to be misled by newspaper reports or mere rumors. *Personally* the meeting was harmonious and the results satisfactory. *Professionally*, however, there was another issue at stake, a question of amenability to the code of ethics. There was but one method of removing from the State Board of Dental Examiners, (a man not a member of the State Dental Association) who continuously and openly persisted in flagrant violations of the code of dental ethics. Friendly remonstrance had failed; resignation requested by the other members of the board had been refused; the Governor had declined to remove him from the position to which he had appointed him.

This member, however, consented to resign with the board "as a body." The resignation of the entire board was accordingly tendered, each member pledging himself, on honor, not to accept a reappointment from the present Governor.

The resignation was promptly accepted, thus securing, by the only means within the power of the board, the removal of one who, by virtue of his position should be regarded as a representative man, and as one whose example it was safe and wise to follow; but who, while nominally, from his position, engaged in upholding the profession, was virtually debasing and degrading it by the pernicious example, in violations of the code, set to those owing their license to practice dentistry partially to him, and who might rationally excuse themselves in violating the code and their consciences *for the sake of gain*, by saying "I am only doing what is done by a member of the Board of Examiners, whose example I am safe in following." Dr. Walker concluded by expressing the hope that the new board to be appointed would be composed of upright, honorable men, who would sacredly guard the portals of entrance to our loved profession.

On motion of Dr. F. H. Smith, Dr. Walker's report and explanation was accepted and ordered published with the proceedings, and the action of the late board commended and endorsed by the Association, with thanks to Dr. Walker for the same, (the paper as read by Dr. Walker, was also signed by Dr. Geo. B. Clement, as Secretary of the board during its entire existence.)

In view of complications arising from the disorganized condition of the Association's reports and papers from the sections were withdrawn. The President appointed Drs. W. E. Walker, G. A. McIlhenny and W. T. Martin a committee to draft the resolutions necessary to dissolve the "Mississippi State Dental Association" and turn over all its effects to the "Mississippi Dental Association." Adjourned.

At 3 P. M. the Mississippi State Dental Association, and the Mississippi Dental Association met in joint session and the two Presidents, Dr. J. B. Acken and Dr. W. E. Walker on the platform.

The Committee on Resolutions reported a preamble and resolutions explaining the situation and tendering as a donation to the Mississippi Dental Association, all the books, monies and properties of the Mississippi State Dental Association, instructing the Secretary of the M. S. D. Association to deliver to the Secretary of the M. D. Association all books and properties in his possession, and instructing the Treasurer of the M. S. D. Association to deliver to the Treasurer of the M. D. Association all of the books and monies of the M. S. D. Association, concluding with—

"And further be it resolved, that the Mississippi State Dentul Association be and hereby is dissolved."

The resolutions were accepted and the committee discharged.

The President Dr. J. B. Acken then formally declared the MISSISSIPPI STATE DENTAL ASSOCIATION forever dissolved.

He then introduced Dr. W. E. Walker, President of the

MISSISSIPPI DENTAL ASSOCIATION,

who took the chair.

The revised Constitution and By-laws, submitted to the old Association was adopted by the newly organized Association, a committee being appointed to make the slight verbal changes necessary.

The revised Constitution and By-Laws, with Code of Ethics attached, was ordered printed and distributed to every licensed dentist in the state.

Resolutions of thanks to all who had in any way contributed to the success of the meeting and the comfort and pleasure of the meeting were adopted.

Dr. J. B. Ackers said that he thought it desirable, for many reasons, that the Association should meet hereafter at the same place as the Board of Examiners, and immediately following the meeting of the Board. It has been customary until the present meeting, for both bodies to meet simultaneously, but this has had the effect of depriving the members of the Board of all the benefits and pleasures of the Association.

Dr. Walker said that under the old system of examinations, it had usually taken at least four days for the board to finish its work, but under the system adopted at the last meeting the work had been well done in two days. The board is compelled by law to meet on the first Tuesday in April. If the Association convenes on Wednesday of the same week, at 2 P. M., the members of the board, under the new system would only lose the preliminary work, addresses, etc. of the opening session.

After some discussion of the subject, no other nominations being made, Jackson was selected as the next place of meeting, and Wednesday after the first Tuesday in April, the time. The Association then adjourned to meet in 1895, at the time and place chosen.

MISSISSIPPI BOARD OF DENTAL EXAMINERS.

On the 5th of May, immediately after the adjournment of the Association Gov. Stone appointed the new Board of Dental Examiners, as follows:

Dr. G. L. Nisbet, Aberdeen; Dr. D. B. McHenry, Grenada; Dr. J. B. Acken, Vicksburg; Dr. C. W. Robinson, Magnolia; Dr. E. E. Spinks, Meriden.

These gentlemen are all esteemed members of the Mississippi Dental Association, thus meeting the hope expressed by Dr. Walker that the new board would be composed of "upright honorable men,"—men who will undoubtedly "sacredly guard the portals of entrance to our loved profession." The new board will organize May 15.

ALL SORTS.

Mathews, on a Method of Making Bridge-Work less Unsightly.—In regard to the exposure of gold in bridges and artificial crowns, I have overcome the objectionable feature partly, by making that exposed part out of clasp metal that is white colored and similar to the tooth. I recently put some bridges on the canine teeth where I took an impression of the front of the teeth, and made stamps, stamping the front just as I do for a gold crown, soldered the covering to it, and it is not very conspicuous.—*Extract Western Journal.*

Woodhouse (R. H.) on Iodine Liniment.—He said there was one disinfectant, iodine liniment, he had found it gave better results than any other antiseptic in long standing cases; it entered into combination with any albuminoids that might be present, and certainly made them inert. He sometimes filled fangs with iodine liniment for two or three days, and such teeth, as a rule, went on exceedlingly well; but if he had used any other disinfectant he should have had a great deal of fear.—*Extract Jour. Brit. Asso.*

Diack (A. W.) on A Local Sedative for Devitalization of Dental Pulps.—I have used several agents in the place of the morphine, which drug I believe has very little anodyne properties, tannic acid, aristol, iodoform, hydrochlorate of cocaine and oil of cloves; all have been used in the mixture but with negative results, at least in my hands. Recently, however, I have been using a mixture of belladonna extract and arsenious acid, in proportion of two of the extract to one of the acid. This is made into a paste with glycerine.

I used the extract of belladonna because of the well known anodyne effect of the drug on the sensory nerves. The glycerine I use because of its emollient property and also because of its power of being easily absorbed. I have used this formula in several cases, and, so far, feel very hopeful, as I have yet to hear of any severe pain.—*Extract Register.*

Pedley (D.) on the Action of Corrosive Sublimate on the Exposed Pulp.—The result may be expressed in a few words. In lower molars the action of $H_g.Cl_2$ seemed more satisfactory than in upper molars.

The pulps are always dark in color, and after six months the tooth substance was deeply stained. In several teeth the pulp was found dry and leathery. In the majority of teeth the pulps were found quite moist. Occasionally the nerves from the posterior fangs of lower molars were dry and leathery. Those from the upper palatal fang were invariably moist.

Whether the teeth are filled with gutta percha or osteo there was no apparent difference in the condition of the pulp or the canals. In teeth which were opened up after two years, the pulp and nerves were as moist as those opened up after two weeks.

I am willing to admit that there may be some better methods adopted for securing better results than I have obtained; but the general impression gained is one of dissatisfaction. It seems quite possible to render the contents of the pulp-chamber and nerve canals aseptic but experience has taught me that there is more or less uneasiness in biting on a tooth containing a pulp treated in this way, and that whenever uneasiness was marked the pulp and nerve were in a moist condition.—*Ext. Brit. Jour.*

Shulze (Dr.) on Bridge Setting.—Now, in regard to putting on the bridge. If you choose an open-faced crown (which some dentists think is wrong, and by the old method I think it has been wrong, and that it has been a failure with cement) and put that open-faced crown on the tooth with chloro-percha, that you have got just as secure an attachment and a perfectly secure condition around the tooth. For instance, if you want to put a bridge on from a cuspid to a molar, you have a good, strong, solid, cuspid tooth, instead of destroying the nerve of that tooth and cutting it off, and putting on a Richmond crown to get your attachment, fit on an open-faced crown with as much open face as you can. You have your bridge already put on; take the chloro-percha made of either chloroform and base-plate, pink base-plate, or Hill's stopping, is the best gutta-percha to dissolve, and one that has very little sediment—white gutta-percha has so much marble dust in it, it will settle and we do not have a thick, consistent gutta-percha cap. Then take and flow the inside of the crown with chloro-percha; let the chloroform evaporate and give it another coating and let that evaporate until you have a good lining to the crown. You have everything all ready to be placed on; flow the chloro-percha on your tooth that is to be covered by the crown, adjust that crown, push your bridge in place, and when it has set it is the best cement attachment ever put on.—*Extract Western Journal.*

The Influence of Alcohol, Glycerine, and Oil upon the Action of Disinfectants.—Koch showed as long ago as 1881, that carbolic acid dissolved in alcohol or in oil, loses to a great extent its disinfecting power. P. Lenti, of the Institute of Hygiene, of Naples, has recently taken up the study again, and has reached the following results in a series of studies in which corrosive sublimate and lysol were considered, as well as carbolic acid:—

Corrosive sublimate dissolved in absolute alcohol does not destroy spores, even in so strong a solution as $\frac{1}{250}$, and when in contact with the solution fully forty-eight hours. The only effect observed was the diminution in the virulence of the germs. When ten per cent of water was added to the alcohol, a solution of corrosive sublimate $\frac{1}{1000}$ rendered the germs inocuous.

A two per cent solution of corrosive sublimate (1-50) in pure glycerine had no effect upon germs, even when left in contact for four days. The same result was noted with the addition of thirty per cent of water; but by increasing the proportion of water to forty per cent, a solution of corrosive sublimate ($\frac{2}{1000}$) destroyed spores at the end of twenty-four hours.

A ten per cent solution of carbolic acid in alcohol possessed no germicidal properties whatever. The same results were attained when water was added, even in so large a proportion as fifty per cent. When the proportion of water reached eighty per cent, the germs were destroyed, providing the contact continued for forty-eight hours, but were still alive at the end of twenty-four hours.

A ten per cent solution of carbolic acid in pure glycerine was found to be powerless to destroy germs, even when left in contact with them for seventy-two hours. The same result was obtained when the solution contained ten per cent of water. In order to render the solution at all effective, it was necessary to increase the proportion of water to eighty per cent, and contact for forty-eight hours was then required to completely destroy the germs.

A solution of carbolic acid in pure oil, even at a strength of twenty per cent, was found to be valueless as a germicide.

A ten per cent solution of lysol in oil was found to be equally valueless.—*Bacteriological Review.*

Mascort (A. E.) on Salol as a Root Filling Material.—After drying with absolute alcohol and hot air, if the roots are not affected with abscesses or fistula, I insert, as far as I can without harming the patient, the Evans root-drier. Then the root is ready for salol. Put a little of it in a small test tube, where it is liquefied over a spirit-lamp. Take some of this liquid in a warm hypodermic syringe, and by using a very fine needle this warm substance may be injected to the very apex. Little skill is required to do this. After the needle is introduced in a canal, the liquid is injected to an amount that will not exceed the quantity needed to fill the canal. The needle must be withdrawn very slowly, always throwing in liquid when retiring it, so as to replace its bulk by the liquid pouring from it. If all this is neatly done, the whole amount of liquid injected will be suspended by capillary force in the canal on account of the small caliber of all canals, no matter in what jaw. Let the liquid now crystallize. In a few minutes it will become nearly as hard as the dentine. I then clean out any little excess dropped over the tooth outside the place it is wanted, by using a pledget of cotton moistened with ether or absolute alcohol.

The objection may be made to the use of salol, that it is apt to pass through the foramen and beyond the apex of the root. It, however, does not oppose the same objection in this regard as gutta-percha. Salol is in itself an antiseptic, containing about thirty-eight per cent. of phenol. The presence of a substance like this introduced into different tissues has been recently shown to be most favorable. It could not be otherwise. Foreign bodies produce inflammation of tissues only when they are infected. Leber has stated that indifferent non-oxidizable foreign bodies aseptically introduced into the tissues or cavities of the human body caused no suppuration. Now, if indifferent bodies can be tolerated by living tissues without inconvenience, how much more so can a body which is not only aseptic, but, at the same time, antiseptic. A few days ago, I lifted from the crown of a lower molar a mass of oxyphosphate-of-zinc cement, which I put last year over a mass of salol filling the chamber of the pulp. When I inserted the filling, the bottom of the cavity was decayed to the pericementum, so that I had to keep over it a piece of absorbent paper to dry the blood coming out. When the salol was sponged out, after having been melted by a heated instrument, I found that everything had gone so well under this layer that the surface, before bleeding, had now the appearance of a newly formed tissue.

Salol can be successfully used also for pulp-cappings. Mixed with iodoform, aristol, or oxid of zinc, it forms a mass most useful for capping exposed pulps.—*Extract Cosmos.*

St. John (I. C.) on a Combination Oxyphosphate and Gold Filling.—The method of making a combination filling of oxyphosphate and gold, as herein described, is applicable to accessible cavities which are deep and have thin, weak walls and margins.

The result of the combination is a filling embracing all the acknowledged good features of a cement filling, also one with a permanent surface. There are many different styles of cavities, in which this method, or a combination of it with the ordinary method of filling with gold, may be employed. Into the cavity a ball of oxyphosphate is placed, which has previously been quickly mixed and is just thick and dry enough not to adhere to the fingers when it is rolled between them.

The cement is to be quickly forced against every portion of the cavity, but that which is in contact with the lower wall of the latter is immediately drawn up and away from it, leaving a crevice into which is to be tucked the end of a previously annealed strip of No. 60 or No. 120 gold, or better, iridium gold.

The cement is to be immediately forced down against the gold, pinning the latter firmly against that wall of the cavity.

The end of a second piece of annealed heavy gold is introduced in a similar manner at the cervical portion of the cavity.

The surface of the cement, when hard, is to be carefully trimmed off, so as to leave sufficient space for a thick layer of gold over it.

The hard cement surface is then to be carefully moistened with a little oxyphosphate, mixed very thin indeed, and the free end of the upper piece of gold is immediately brought down over it, and adapted to the moist cement surface, by holding it in place with a strip of cottonoid, or some other suitable material, while a burnisher is thoroughly applied to the latter, thereby causing the gold to perfectly conform to the surface of the cement, while the cohesiveness of the gold surface is fully preserved. The lower piece of gold is then to be lapped up over the other piece of gold and both burnished and malleted to it, the burnishing being accomplished in the same manner as was that of the first piece of gold.

To the gold foundation thus provided sufficient gold can be readily added to secure a strong surface and good margins. The advisability of introducing other strips of heavy gold at the sides of such a cavity must rest with the individual operator to decide, as is also the case relative to the use of grooves cut into the cement, or into the walls, wherever there is strength of tissue to justify it. One point which it is well to bear in mind is, that the thinnest wall and margin is the one against which the gold is to be placed in this manner. The gold strips so fastened between the cement and walls of the cavity offer resistance to force at the edge of the filling, where it is of the greatest value. The layer of thin cement makes a smooth and perfect joint, and, when set, the adhesive qualities of the cement are a benefit.—*Cosmos.*

EDITOR'S NOTES.

THE SEMI-CENTENNIAL OF THE DISCOVERY OF ANESTHESIA.

Steps are being taken toward the celebration of the semi-centennial of the discovery of anesthesia at Hartford, Conn., Dec. 11, 1894.

At the recent meeting of the Connecticut State Dental Society Drs. G. L. Parmelee, Jas. McManus and Civilion Jones were appointed a committee to arrange for the celebration. It is proposed to have a banquet and place a memorial tablet to mark thespot where the first operation under an anesthetic was performed.

The following resolutions were introduced by Dr. McManus, of Hartford:

"*Resolved*, That the members of the Connecticut State Dental Association in commemorating the semi centennial of the discovery of anesthesia, feel it a duty to briefly restate and publish a few facts, so that the present and future generations may know the truth regarding it. In the ages past many men may have given one or more drugs with the hope of giving freedom from pain during surgical operations, but the fact is indisputable that Dr. Horace Wells of Hartford, Connecticut, was the first man to deliberately take by inhalation an anesthetic and to persistently after proclaim to the world that a surgical operation had been performed on him without pain while under the influence of nitrous oxid gas (an anesthetic) Dec. 11, 1844.

While we would not detract from, but willingly give all due credit to the men who have since that memorable day introduced other more powerful and dangerous anesthetics and which for a time were so successfully forced upon the public by the recommendations of the medical fraternity that the safer anesthetic discovered by the dentist, owing to his early death, was nearly stamped out, and humanity for many years was deprived of its use and its blessings; until it was again taken up by Connecticut dentists and its value as a safe anesthetic proved daily in thousands of operations since 1863.

The physicians and surgeons of the city of Hartford united in a testimonial declaring their belief in the justice of the claims of Dr. Wells in 1845 and 46.

The General Assembly of Connecticut in 1847 passed resolutions in favor of Dr. Wells as the discoverer of anesthesia and declared that he was entitled to the favorable consideration of his fellow-citizens and to the high credit of a public benefactor.

The Court of common council of the city of Hartford passed resolutions to the same effect.

In France the medical society in Paris, Jan., 1848, voted to Dr. Horace Wells of Hartford, Connecticut, is due all the honor of having first discovered anesthesia.

The state of Connecticut and the city of Hartford with the added contributions from citizens of this and other states, have had placed in Bushnell park in Hartford a portrait statue in bronze of Dr. Horace Wells; and the past year the Board of Dental Commissioners have had stamped on their certificates of registration and license a seal on which is a medallion head of Dr. Wells to remind all dentists in the state of the honor due to his memory.

The public should not be allowed to forget that the simple, honest, christian desire of this dentist was to give his discovery to all to be 'free as the air we breathe,' and his course in regard to it stands out grandly when compared with the extortionate plans laid by all other vendors of secret anesthesia for the use of which they demand of suffering humanity an unjust tribute."

The Odontological Society of Pennsylvania and the Dental Society of the state of New York have each appointed a committee to take action upon the part of the dentists of these states.

A part of an editorial in the next issue of *The Dental Practitioner* will read as follows:

"But the subject is too great and too comprehensive in interest to be monopolized by any single body of men. Every dentist throughout the world is concerned in the matter, and should have an opportunity in some way to assist in celebrating an event that must be to him a matter of personal pride. But the time is limited, and whatever is to be done must be done quickly. Half the year has flown without any general organization having been effected, and unless immediate action be taken the most momentous event in our professional history will not receive the attention which its importance demands.

In this emergency we take the liberty to suggest that every dental society in the land, as far as possible, appoint delegates to meet at Old Point Comfort at the time of the annual sessions of the American and the Southern Dental Associations, there to agree upon some concerted plan of action. It is no time for any elements of personality to enter into the consideration of the matter, or for any claims of priority in conception to be urged. Let us as one man unite in honoring ourselves and our profession, by doing honor to the memory of the man who did so much to honor us. We sincerely hope that there will be a unanimity of feeling among us, and that every dental society, especially every State organization, will through its proper officers appoint a committee to meet at Old Point Comfort, Virginia, in August next."

We hope the various dental organizations of the country will take prompt action in this matter that the celebration may be a creditable one.

SOCIETIES.

CONNECTICUT STATE DENTAL ASSOCIATION.

The 30th annual meeting of the Connecticut State Dental Association was held at Hartford, May 15 and 16. The following gentlemen were elected officers: Dr. Chas. P. Graham of Middletown, Pres't; Dr. Clinton W. Strong of Bridgeport, Vice Pres't; Dr. Geo. L. Parmele of Hartford, Sec'y; Dr. Daniel A. Jones of New Haven, Treas. Charles M. Manus, C. C. Barker and W. H. Rider, Executive Committee.

Mr. Charles T. Wells, son of Horace Wells, the discoverer of anesthesia, was unanimously elected an honorary member. The following gentlemen having been in practice in the state over fifty years were elected active members for life: Dr. S. J. Fuller, J. A. Pelton, Geo. H. Waters.

Papers were read by several of the members and by Dr. Thomas C. Stellwagen of Phila., Dr. C. E. Francis of New York and Dr. Maxfield of Holyoke.

The Association publishes monthly, a bulletin for distribution among the members.

AMERICAN DENTAL ASSOCIATION.—The thirty-fourth annual session of the American Dental Association will be held at Old Point Comfort, commencing at 10 A. M., Tuesday, August 7, 1894.

GEO. H. CUSHING, *Recording Sec'y.*

COMMENCEMENT.—Chicago College of Dental Surgery held its twelfth annual commencement April 30, 1894. Graduates 58. Matriculates 360.

BRIEFS.

— A very convenient way of keeping nitrate of silver ready for use is to soak asbestos fibres in a saturated solution, and allow to dry.—*Zahntechniche Reform.*

— A new metal, says *L' Echo des Mines*, has been produced of iron and nickel that will sustain a pressure of 15,000 atmospheres. It has been named Krupp metal and will be used for ordnance firing heavy charges of dynamite.

— WHEN a glass stopper sticks in the bottle, pass a strip of woolen cloth around the neck of the vessel and seesaw it backward and forward. This friction causes the neck to expand, so that the stopper becomes loose. On this principle of expansion by heat a tight screw may be drawn from a metal socket with a cloth dipped in boiling water.—*Scientific American.*

— IN making a combination gold and amalgam filling Dr. Kells inserts Hill's stopping, which is properly centoured in that portion of the cavity where it is desired the gold will be placed. The rest of the cavity is then filled with amalgam, and very carefully finished off beneath the gum,—the vital point. At another sitting the Hill's stopping is removed and replaced by gold.

— Dr. Onderdonk's method of adjusting Logan crowns is to adjust the rubber-dam on the root, grind crown to fit approximately, and then, by means of special instruments, wafer, trim, and adjust the wafer of gutta-percha to the end of the root, having first smeared it with varnish. The crown is pressed to place, the gutta percha trimmed at the margins, and the attachment made with oxyphosphate cement.

— Professor Miller, of Berlin, has made a communication of practical importance as to the possibility of rendering the natural contents of the pulp chamber permanently sterile, and so diminishing greatly the length of time involved by their thorough removal. A pastille was placed over the commencement of the root canal containing hydrarg. bichlor., 0·004 gramme, and acid thymic., 0·006 gramme. An insoluble albuminate of mercury is formed by the action on the remnants of the pulp. This salt is itself a germicide of considerable power.

— In regard to writing dental literature Dr. C. N. Johnson says: Study simplicity of style, plainness of speech, aptness of phrase and brevity of expression. Think out the thing that you want to tell—think it out clearly in your own mind so that the idea is indelibly engraven there before you attempt to put it on paper. When you begin to write keep the idea firmly fixed as your text and write strictly to that text. Go at once to the heart of your subject, say what you have to say about it in the most concise and direct manner, and when you are through—stop.

— Dr. F. M. Smith suggests that plugger points can be serrated as follows: The plugger point is first softened by heating to a very red heat, and covered up with asbestos or ashes until cool. Then with a fine file the old serrations are removed, being careful to leave a perfectly flat surface. A very fine cut plate-file of six or eight inches is laid flat on the bench or table. It will be observed that for a short distance from the handle end the file cuts are only in one direction, so that if the plugger point is held perfectly straight up and down and shoved lengthwise of these cuts, the points may be very nicely serrated. Should the serrations not be deep enough, it will be necessary to file them off and serrate again. Then temper by heating to cherry-red, and plunge in mutton-tallow.

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CONTRIBUTIONS.

COCAINE.*

BY ARTHUR R. CUSHNY, A.M., M.D., ANN ARBOR, MICH.

COCAINE was first introduced into medical practice in 1884, although its action had been described some eighteen years before. Between 1884 and 1889, about 114 cases of poisoning occurred, of which six proved fatal. The publication of these figures has resulted in deterring many surgeons and others from the use of a most useful drug. On examination, however, we find that in many cases what must be characterized as enormous doses were used, for in two cases which I have looked up, the doses were 12 and 20 grs. respectively. Cocaine belongs to the group of the alkaloids, and these as you know comprise some of the most powerful poisons. Very few of them could be injected in doses of five grs., and cocaine is no exception to the rule. To discard all drugs that are poisonous in doses of 12-20 grs. would result in removing from the pharmacopia almost all the most useful active principles.

Cocaine acts principally upon the peripheral endings of the sensory nerves and on the central nervous system. The terminations of the sensory nerves are completely paralyzed causing

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anesthesia of the part to which cocaine has been applied. This paralysis is however, not confined to the peripheral endings, for recent investigation has shown that sensory nerve trunks may also be paralyzed by cocaine, that is, the conductor power of nerves is destroyed. Whether it would be advisable to use this paralysis of the nerve trunk for anesthesia, is I think, open to question, for such interference with the trunk of a nerve is liable to set up neuritis.

The peripheral action of cocaine is that which is made use of chiefly in practice. Its action on the central nervous system is only seen in cases of poisoning and in rare cases where it is used internally as a stimulant. Schroff described this central action many years ago and it has been in use in South America since time immemorial for its action on the brain. Anrep studied its action on the dog and described it as a powerful stimulant to the brain. The dog immediately after the injection becomes excited, and cannot stand still but runs about, leaping and dancing on its hind legs without cessation. The movements are altogether different from those seen in strychnine tetanus. There is no convulsive movement, no tonic contraction. The action seems to be on the highest spheres of the brain. The movements are those of a pet dog meeting his long lost master. This stage lasts one to three hours and then gradually passes off, the animal becoming normal again.

On larger doses being given the excitement is still greater, but then one sees distinctly that the dog has no longer control over himself—he runs in a circle and when called evidently tries to approach but cannot leave off the constant movement, in fact his motor centers have run away with the animal. If caught he is found to be restless, scarcely recognizes his owner, is very easily frightened and trembles violently. After some time this stage passes off and languor and exhaustion set in, but he recovers in a few hours completely. On giving $\frac{1}{3}$ gr. per kilo, a short stage of excitement is seen, but very soon great exhaustion follows, then convulsions, unconsciousness, stupor. The explanation of these symptoms is extreme stimulation of the cortex. This stimulation is followed by weakness and paralysis of the centers. In man this stimulation is also seen often in smaller doses—talkativeness, disposition to movement, laughter and general jollity. More marked however in man is the stage of paralysis of the brain, shown by giddiness, languor, feeling of weakness and faintness, pallor, indistinct vision, unconsciousness, which may pass into collapse. The pupils are widened by stimulation of the sympathetic terminations in the iris. The respiratory center is first stimulated and then paralyzed. A curious feature is a sort of Cheyne-stokes respiration which appears in severe poisoning. Even with small quantities it is found that the breath can be held much longer than normally. The respiratory stand-still is the cause of death. The heart itself is comparatively unaffected, but the vagus is paralyzed and it is therefore quickened. In very large doses it may be weakened and slowed by direct action of the drug on the heart muscle. All the mucous and salivary secretiory glands are weakened and the patient often complains of dryness of the throat and tongue.

In conclusion I think I am justified in saying that the disrepute into which cocaine has fallen in a section of the profession is undeserved. The smallest dose which has hitherto been shown to produce any symptoms is 1¼ grs., and this is more than is sufficient for any of the smaller operations and is far more than is required at any rate for one tooth. The only point to be remembered, is that the cocaine must be pure and that it ought to be used in about 4 to 5% solution. When impure cocaine is used, the blame should be borne by the manufacturer and operator, and should not be laid on the drug.

I should like to say a few words regarding the chemical nature of cocaine, as it is probable that before many years are over several new allied preparations will be put on the market. Cocaine, like so many of the vegetable alkaloids, is a derivative of pyridene. In it the pyridene ring is combined with the oxypropionic acid to form ecgonine. The ecgonine is then combined with methyl and the hydroxyl group substituted by benzoyl. In coca we find several other alkaloids closely resembling cocaine; in one the hydroxyl group is substituted by cinnamyl instead of benzoyl, and in the truxillines the molecule is doubled. Besides these, several cocaines have been formed artificially, and we seem to be approaching the time when we will no longer depend on the coca leaf for our supply of cocaines, because they will be manufactured synthetically. Moreover the molecule of cocaine can be altered so greatly and still preserve its anesthetic properties, that I think we may very soon form a base which possesses all the virtues and none of the disadvantages of cocaine.

Ecgonine is very nearly related to the tropin radicle found in atropine, hyoscine, etc., and a new alkaloid has been described lately which belongs to the tropeins, or rather the pseudotropeins, but possesses the cocaine anesthetic action. This new alkaloid is tropacocain. As you are aware, atropin and the allied bodies have been long known to possess slight local anesthetic powers. This power is much increased however in tropacocain which as a local anesthetic promises to prove a formidable rival to cocaine. Its pharmacological action has been studied by Chadbourne who attributes to it a considerably greater anesthetic action than cocaine, with less pronounced toxic properties. Its anesthetic properties have been testified to by several opthalmic surgeons, but its use has been too limited as yet, to admit of my discussing whether its toxic action is greater or less than that of cocain. Here again, however, we have another series of bodies possible, which may prove to be of great service as local anesthetics, and, if the pseudotropeins prove to be less dangerous than the cocaines, we may possibly find in a few years cocaine dropping out of use and its place being taken by a synthetically manufactured pseudotropein.

DISCUSSION.

Dr. Carrow, Ann Arbor, Mich.—My learned colleague has given us some very interesting facts concerning the action of cocaine upon the lower animals. But we must bear in mind the fact that there is a great difference between experimentation upon the lower animals in the laboratory and the practical use of the drug which the pharmacist furnishes us.

I would not disparage the value of such experiments for they are of much service to us. But when we are told that a drug has a certain effect upon the lower animals, we must not think that the same drug will necessarily produce a like effect on the human animal. I have found cocaine a safe and efficient anesthetic. I use a great deal of it in my practice. During the school year I have used in my hospital practice five ounces of cocaine. That is a large amount. In my private practice I of course do not use so much.

Ordinarily I apply this in four cent solution, although I do use it in six, eight, and in the nose ten per cent solutions, being careful not to apply too much of the stronger solutions. And yet without exercising extreme care, either with respect to the patient or the strength of the solution, I can recall but one case where I have had trouble. In this case there was an idiosyncrasy against the use of this drug of which the patient was aware. She had a decided intermittent pulse. The operation was the removal of a truncated body which occluded the nostril. I gave her cocaine. I noticed none of the manifestations which my my learned colleague has told us appear as a result of the administration of cocaine, except the irregular action of the heart. All other symptoms—dilation of the pupil, hurried respirations, etc., usually present in chloroform anesthesia, I found in this case.

After an extensive use of this drug, I am convinced that it is one of the best anesthetic agents, at least for the ophthalmologist. I am partial to the large crystals of Parke, Davis & Co.

In operating upon the eye, I drop the solution on the cornea. After four applications, made three minutes apart, two drops applied each time, the eye is sufficiently benumbed to enable me to open the eye and perform the necessary operation without the slightest sensation on the part of the patient, and by this I mean don't-feel-it.

When operating upon small tumors, epithelioma of the tonsil or a small growth on the pharynx, I use about a quarter of a dram of the four per cent solution, going around every side of the tumor. The blood-letting which naturally follows the making of the incisions is sufficient to overcome what might otherwise be a dangerous tendency. I have been called in by other physicians in cases where there was exhiliration followed by extreme nervous condition and a low condition generally of the system, after the use of cocaine; and I have experienced the same thing in my own practice. But in all these cases a generous dose of whiskey was sufficient to do away with all ill effects.

I think in dental practice the solutions used are not strong enough. Probably we will never arrive at the stage when anesthesia, especially that produced by cocaine, will entirely benumb the tissues at the end of the fang of the tooth, because we cannot reach the spot so as to deposit the cocaine there. But if the drug be applied about the superficial parts of the tooth, I am sure the extraction can be accomplished without the patient's having the slightest sensation. And, if, instead of a ½ per cent solution, a drop or two of eight or ten per cent solution be applied to the surrounding surface before the rubber dam is adjusted and as is so frequently the case, the thread or clamp jammed up into the alveolar process, operations would be painless and the irritation attendant upon such operations done away with.

As to the newer preparation of cocaine which Dr. Cushney tells us is to come into general use, I would say the old preparation—hydrochlorate of cocaine—is good enough for my purpose; it is in itself a perfect drug.

Dr. Hoff, Ann Arbor, Mich.—Do you use a remedy in connection with cocaine solution?

Dr. Carrow:—I use simply a water solution, except in some cases I accompany the hydrochlorate of cocaine with atropine; the effect of the atropine is greatly increased when the same quantity of hydrochlorate of cocaine is added to it.

C. P. Pruyn, Chicago, Ill.—Shortly after Nikolsky made his first experiments, I obtained some cocaine and began to use it locally, but with little effect as we used it at that time. I then began a series of experiments, using dogs for this purpose. The learned gentleman who has preceded me tells us that experiments upon dogs and those upon the man are not analagous. There are, however, many things that we need to know that can be learned only through experiments upon the lower animals. Many times I have seen symptoms that would have alarmed me had I not seen the same thing when experimenting upon dogs.

Usually I procured two dozen dogs and paired them according to size and makeup. To one I gave cocaine; to its mate I administered the same dose of cocaine, but first reinforced it with an antidote. For this purpose I found morphine best. I gave the morphine say twenty minutes before administering the cocaine. I used small doses in all experiments as well as in practice. In one case five minims of a four per cent solution produced marked dyspnœa. I now use altogether a two per cent solution; I find that I can accomplish with it all that I formerly accomplished with the four per cent solution. I am surprised that Dr. Carrow should recommend such large doses. At Goshen, Indiana, death occurred from the administration of a little more than one grain. Doubtless many of you have seen reports of thise case. The gentleman was about fifty years old. He was a banker, a man of sedentary habits; he was not well preserved. He suffered from rheumatism and neuralgia and had chronic diarrhœa. He went to a dentist for an operation, as he was suffering so greatly from neuralgia. Seven or eight minims of a two per cent solution of cocaine was given him and the operation performed satisfactorily. A month later he went to another dentist who gave him eight minims of a four per cent solution and extracted several roots. In neither case were there toxicological effects. Ten days later, having other roots to be extracted, he went to the first dentist. This dentist had, in the meantime seen a report of a formula, as follows:

℞	Atropine, ...	grs. $\frac{1}{10}$
	Strophanthii, . . .	“ $\frac{1}{5}$
	Cocaine mur. . . .	“ L
	Acidi carbolici, . . .	“ X
	Ol. carophyli, . . .	miij
	Aqua destil., . . .	℥j

He injected of that about ten minims or possibly a little more. Instantly there was a state of collapse and in twenty minutes the man was dead. Cases of this sort alarm us.

I took my little son, a lad of about ten years to a rhinologist to have a simple operation performed on the nose. I took him about 11 o'clock in the morning, a time when digestion had taken place. The doctor applied a ten per cent solution of cocaine by means of a swab. The poisonous effects were manifested at once. The little lad was given aromatic spirits of ammonia and whiskey. He soon recovered. A week later I again took him to the doctor, at the same hour in the day; but I gave him a cup of coffee and a sandwich as reinforcement. The same amount of the solution was used as before; but there were no ill effects. A short time after that he was taken again for a similar operation, at the same hour, but without the reinforcement. Everything was apparently all right. The operation was performed and the little fellow started from the office; then the poison began to take effect, and it was with the greatest difficulty that he reached my own office. The spasmodic effects were very marked in this instance. I applied the usual restoratives and resorted to artificial respiration.

In the name of my profession I would like to enter a protest against the claims made for cocaine by the gentleman who preceded me. It seems to me this drug is one that should be handled with a great deal of care. In dental practice the systemic effects of the drug are more marked than in cases of amputation of limbs, for instance; for the vital nerve centers are reached through the reflexes, in operations about the mouth. All these patent nostrums, put forth as specifics for pain, have as their active principles cocaine. Somebody is going to suffer; thousands have already suffered. Note the way in which rhinologists use it. There is a case of chronic catarrhal condition, perhaps an operation has been performed. A prescription containing cocaine is written out, the patient takes it and experiences relief. He gets more of it, and then a little more, and thus is established a habit far more terrible than the opium habit.

Cocaine is a good remedy, I myself use it, but do not let us abuse the good things that we have. Let all who intend to make use of this drug, first experiment on the lower animals that they may become familiar with its action.

A French doctor is using cocaine in oil with a little acid for preservation. He thinks the cocaine is not so rapidly absorbed as when used with water. I have had no experience with this myself.

Dr. Cushney: I am gratified that so high a tribute should be paid to experimental pharmacology. The experimental pharmacologist was quite aware of the anesthetic properties of cocaine twenty years before it came into use in medical practice. You will find it described in a text-book for example, written in 1880, in which the author described fully the local anesthesia produced by this drug; and although this book was written four years before the introduction of the drug, cocaine is there recommended in cases of operation upon the eye and upon the larynx.

I am much surprised that so small a dose as that given in the case at Goshen should have resulted in death. It is perhaps a question whether the drug used was pure or not; and whether death was not due to shock rather than to the drug. This same question arises in connection with the use of chloroform and ether, from the use of which so many deaths occur, especially in dentistry. Many times death is caused by shock. Complete insensibility is not always produced; the nervous system is weakened both by the drug and by the shock and death results

I think different antidotes are indicated according to the stage of poisoning. If the exhilaration reaches a sufficient high point, a narcotic, such as chloral, is indicated; in the stage of depression, undoubtedly the best drug is caffein injected subcutaneously or taken through the mouth, as suggested by Dr. Pruyn. This drug is a stimulant to the heart and to the nervous system.

The idea of using cocaine in oil is certainly a very curious one. It might retard the action of the cocaine, but before the drug takes effect it must be absorbed. I do not see that the oil is of special benefit.

Dr. Carrow: I feel that I must attempt to clear myself from the other grave charge brought against me. Now, if I were to have anything done to my teeth I should want to go to such a man as Dr. Pruyn. He evidently is a close observer, and a careful and conscientious man—that is the kind of man I try to be in my own practice.

Now I do not want to advocate cocaine too strongly; I hardly know that I can. But I would like to ask this question: Because now and then death has occurred from the use of nitrous oxide will you discard it? I think not. Because we have reports of deaths resulting from the use of chloroform shall we empty our carboys of this drug and let our patients stand the shock occasioned the nervous system by the amputation of a limb or the removal of a tumor? I think not. Care should be exercised in using this drug, but I believe in giving it. In the case cited at Goshen, who knows what effect that particular combination of drugs may have had? I believe in a four per cent solution of cocaine. I make this solution fresh every morning. I take a drachm bottle which my little pipette is made to fit, and pour into it a drachm of saturated solution of boracic acid—which is as near water as you can get—then I turn out into my hand from my cocaine bottle what I think is about two grains, I never measure it exactly—and put that into the bottle. If at night any of this solution is left it is thrown away and a fresh supply made the following morning. By exercising care in this way and reinforcing the patient, as suggested by Dr. Pruyn, I am sure no ill effects will follow, and we may proceed with the full conviction that we are doing the best possible for our patients with the sanction which science through experimentation upon the lower animals has given us.

I am glad Dr. Pruyn spoke of the liability of contracting the cocaine habit—a most fascinating habit. I never write out a prescription for cocaine. I buy the drug myself and often the patient is not aware what he is taking; I am particular about this, especially if I think the person morally weak; for strong men I would have no fear.

DR. TAFT: I would like to ask Dr. Pruyn the relative effect of cocaine when applied to the surface and when injected.

DR. PRUYN: The effect of cocaine when applied locally is not so marked as when injected. In the latter case the effect is almost instantaneous.

DR. WATLING: Have you ever had trouble with sloughing at the point where the needle is inserted? I myself am a little shy of cocaine and have not used it much, but I have often seen this trouble when the drug has been injected; it is a question in my mind whether this is caused by the drug itself or by poison on the needle.

DR. PRUYN: I have seen this effect but think it is due usually to dirt on the needle, or perhaps to septic poison on its point, not to the drug.

DR. WATLING: Is this more likely to occur on the gums than anywhere else?

DR. PRUYN: No.

DR. TAFT: I do not know much about cocaine, but from the results produced when it was first introduced I have always regarded it as an unsafe agent to use miscellaneously. In the use of anything to which great danger is attached, the operator should be in the best possible condition, physically and mentally; the dentist because of business pressure or physical depression is frequently not in a condition to make clear discriminations, and I think this is the cause many times, of ill results. When a dangerous agent is employed, as in the case of cocaine, special regard should be given to this point.

DR. BIRGE: At no time have tools and appliances been so perfect as at present. Yet with all the improved machinery, all our advanced, scientific methods of treatment, operations upon the teeth are attended with more or less pain. How to eliminate this is a subject which is receiving more attention from the profession than any other at the present day. And here the charlatans too, are active; one cannot pick up a paper that has not one or more advertisements setting forth that by using some patent nostrum teeth may be extracted without pain.

The very able papers to which we have listened this morning and the discussions upon them, will certainly enable us the better to cope with this matter.

But all that has been said has been along the line of extraction. I think there are many other cases in which the dentist can make good use of cocaine. In the small cavities up under the gums, it is well to touch the gum with a ten or twenty per cent solution for a few moments before adjusting the rubber dam and the clamp; you will find there is not so much complaint about the clamp's hurting. When extracting the pulp I use a spoon-pointed syringe, injecting the cocaine in and around the pulp; then open with a bur and extract with a barb. This can be done without pain to the patient and enables one to clean out the pulp and fill the tooth at one sitting. I have been afraid to inject cocaine directly for extraction of teeth. As Dr. Carrow has stated it is hardly possible to inject cocaine deep down at the apex of the root because of the alveolar process; but injection into the gums will help the first taking hold of the tooth.

I have always held it a religious duty not to inject any preparation whose formula I did not know. It is not safe, nor is it safe to the patient.

I have used ethyl chloride a great deal and like it. Sometimes it leaves the gums intensely red and sore; a little vaseline rubbed on will relieve this. The following formula is one which, although I have not used sufficiently to speak with entire confidence, will, I think, prove very good:

℞	Sulphate atropin . . .	gr. ½
	Strophanthin . . .	gr. ⅕
	Carbolic acid (95% sol.) .	gtts. v
	Hydrochlorate of cocaine .	grs. xx
	Distilled water q. s. . .	f℥j
	Mix.	

I inject four to six drops hypodermically.

I think the profession should "squelch" patent nostrums. Dentists can make up their own formula; if we cease buying these nostrums, they will soon be withdrawn from the market.

Dr. L. P. Bethel, Kent, Ohio: I have always been very conservative in using drugs. Cocaine I consider a dangerous article and think it should be used very cautiously. Indeed it is a question in my mind whether it should be used at all hypodermically, especially above a one or two per cent solution. I think, too, that a third person should be present when it is administered, just as in the case of administering chloroform or nitrous oxide. Of course there is a question as to whether the ill effects sometimes occurring from the use of cocaine are due to the drug itself or carelessness in using it; whether to the impure article or from septic poison due to an improperly kept syringe.

There is a great demand in these days for cheap things, and in order to cheapen some articles, manufacturers adulterate them; hence many of our dental medicines are impure, cocaine among others. Of course to obtain the best results our drugs must be pure. On the other hand a drug may be pure when purchased, but become impure through improper keeping. This is a point that is very important. If possible procure all drugs in original packages from reliable dealers.

I think that all dental societies should take some action in regard to patent nostrums.

There is a great demand for painless extraction and, undoubtedly, as Dr. Taft has said, most of the formulæ on the market for producing anesthesia contain more or less cocain. If a formula could be obtained that would be effectual and not contain this drug it would be a great boon to the profession as well as to suffering humanity.

I give a formula, which, while I do not claim it to be the ideal anesthetic, is one from which I have obtained good results:

℞	Carbolic acid crystals . .	10 grs.
	Gum camphor	8 “
	Iodoform	½ dr.
	Listerine	2 oz.
	Pond’s extract of hammamelis	2 “

In the preparation of this the carbolic acid and gum camphor should be mixed first (gum camphor when mixed with carbolic acid crystals, melts down and forms a clear liquid). To this add the iodoform, followed by the Listerine and hammamelis. The bottle should be shaken occasionally for at least twenty-four hours. The liquid is then filtered. Iodoform has considerable anesthetic properties, and the camphor is said to increase the solubility of the iodoform. Not all the iodoform is dissolved and what is taken up is held mechanically in the mixture, but enough is incorporated by occasional shaking. It is to be used hypodermically and enough injected to thoroughly whiten the tissues.

Dr. Hoff: I have thought that if we had some formula upon which we all could report, our attention would in this way be called to the question of formula making and we might do something toward doing away with quack nostrums. I would offer the following for test. In my opinion most formulæ contain too many drugs; only such should be used as have a definite and needed action. I believe also that much of the sloughing of the gum is due to the strong solutions of carbolic acid. (Even 2%) One-half per cent solutions of carbolic acid will coagulate blood serum slightly.

℞ Cocaine . . . . gr. $\frac{1}{2}$

$$\text{In tablets} \left\{ \begin{array}{ll} \text{Morphine sulph. . ``} & \frac{1}{4} \\ \text{Atropine, . .} & \frac{1}{80} \end{array} \right\} \text{j}$$

Distilled water, carbolized, $\frac{1}{2}$% gtts. xxx.

As you will observe this formula contains both morphine and atropine. Morphine acts more satisfactorily when introduced as a preliminary drug, as its effects are not as promptly manifested as cocaine and atropine. All these ingredients are local anesthetics, in fact all five are. According to Dr. Cushney's statements as to the dose of cocaine, the whole of this preparation could be safely used. I scarcely ever use more than five or six drops for one to three or four teeth; depending on the accuracy of the injection.

Dr. Taft: Every well-informed, self-respecting dentist who feels prepared for his profession, should have a thorough knowledge of the things entering into his equipment. He who makes use of patent nostrums has not that knowledge. In a general way he may know of what the compound is composed, but the exact formula is not disclosed, for obvious reasons, and he who uses them acknowledges his own weakness, he is worshipping unknown gods.

In relying too much upon anesthetics we are weakening our influence over our patients. There is a certain psychical power which every dentist, and physician too, has or ought to have over his patients, for that person to have implicit faith in whatever you may do or say. When such patients come to you and the question is asked, "Do you wish to take an anesthetic?" reply "Oh, no. I do not suffer very much under your hands. If we resort too freely to anesthetics this confidence on the part of the patient is destroyed. Therefore I would say to you, especially the younger members of the profession, bear in mind that you have a power which you ought to cultivate and use for the benefit of your patient and not throw aside fcr these things out of the use of which so much iniquity, danger and harm are likely to arise.

Dr. W. H. Jackson: There is one thing which has not been spoken of. How many of you are careful to use pure distilled water. It is just as easy to introduce poison into the system through the water used as in any other way. It is well too, even if you have disinfected the instrument, to dip its point, just before suing into carbolic acid.

Dr. Pruyn was asked to give his method of injecting.

Dr. Pruyn: I do not know that my method is very different from that employed here at the University of Michigan. I use a hypodermic glass-barrel syringe with a minim gauge on the flange. This gauge I consider very important. On my own instrument there is a little bar on the piston which can be set at any point on the gauge. By using this sort of instrument there is no danger of injecting more of the fluid than is intended. I have cut off the point about one half; the ordinary hypodermic point is too long for our work. A fine point is best, but not one so fine as to be too elastic.

I think the point of Dr. Jackson's a very good one. Even when sterilized water is used it is well to dip the point of the instrument into some antiseptic solution, for disease germs floating about in the air may have been deposited there. Bichloride solution, or a weak solution of cinnamon water are I think preferable to carbolic acid. The cinnamon solution need not be strong enough to act as an escharotic. The constant dipping of the point into the bichloride solution is apt to weaken it; for that reason cinnamon is perhaps the best to use for this purpose.

Dr. Parker: I have found very good results from the injection of *aqua pura*. I have tried this remedy in perhaps half a dozen cases of broken roots. It works admirably. No bad effects follow its use, and accordiag to the patients, operations under it are painless. Probably this is the psychological effect spoken of by Dr. Taft.

Dr. Pruyn: I have used this same valuable prescription in many cases and I could not distinguish the slightest difference between its effects—so far as sense of pain is concerned—and those of a four per cent solution of cocaine. I have had no sloughing or ill effects of any kind! I have imagined that better results were obtained when warm water was used.

Dr. Parker: I have thought best to use water just as cold as I could.

Dr. Pruyn: I have thought that perhaps the effect from the use of water came from pressure upon the nerve terminal filaments. There may be something in this.

A Gentleman: A young lady presented herself to me to have some roots extracted. She had been told to ask for cocaine or something of that kind. I offered nitrous oxide but she did not wish to take that. I applied hamamelis and extracted three teeth *painlessly*.

RESTORATIVES AND RESUSCITANTS.*

BY N. S. HOFF, D.D.S., ANN ARBOR, MICH.

The consideration of the various means and methods of obtaining painless dentistry by this association would not, it seems to me, be complete without some time and thought spent in an especial consideration of the various means and measures that can be called into use, in case the poisonous influences of the anæsthetic make themselves manifest. All persons who have made any considerable use of anæsthetics have discovered that very inconvenient and dangerous symptoms are liable to manifest themselves at times when least expected, and it may be, when the operator is least fortified with antagonizing remedies. Those who have made little or no use of them know from reading of those disagreeable manifestations. Is it not probable that lack of intelligence as to the manner of action and proper use of anæsthetics, also in the selection and administration of restorative remedies, and the management of cases requiring them, that deter many from giving their patients the benefit of painless operations even when most urgently indicated.

In directing your attention to this subject, it is not my purpose to attempt an exhaustive treatment of it, but only to bring together in as concise and practical form as I am capable of doing the approved method of proceeding in the various accidents occurring from the use of anæsthetics. My personal experience has never brought me in contact with many of the more serious aspects of the subject, and you will, I am sure, pardon my assurance in attempting to write upon the subject at all. But the necessities of the occasion forced the subject upon me and I have made my best endeavor with the time at my disposal and the meager material I have been able to get from text books on the subject.

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* Read before the Michigan State Dental Society, June, 1894.

My endeavor is to present the most widely accepted theories as to the nature of these difficulties and the best means for meeting them; and where it is at all possible, to state some of the principles in definite terms. The treatment of the subject will be confined to the accidents which are liable to occur when using the accepted anæsthetics—chloroform, ether, nitrous oxide, and cocaine. For convenience in memorizing we will class the remedial agents under two heads—restoratives and resuscitants.

Restoratives are the more simple means of stimulation, through the reflexes, of the vital organs, in order to hrsten their *restoration* to normal function and for those conditions which usually present no alarming indications.

Resuscitants are indicated when the conditions require a more or less prompt and vigorous interference to prevent dangerous tendencies or fatal results. The restoratives are all that are ordinarily called for, yet occasionally more active measures are needed, and when such times come they come suddenly and with little or no warning. Usually these excessive prostrations are the result of concealed or unknown systemic disorders which make themselves known under the prostrating influences of a general anæsthetic. In order that we may more fully grasp this subject it may be well for us to outline the events which are liable to take place and the means by which they are produced, and under each to outline the treatment and give reason for selecting the remedies indicated.

If we look closely into this subject we will find that it is impracticable to make definite distinction between the several different effects produced by anæsthetics, for oftentimes two or more of the effects we shall describe will be found in a single case. We also find that the same treatment, that is to say, the same remedies will be indicated in different conditions because of this close association of symptoms and effects produced. The only object in making this distinct classification is that it may help to retain the matter in memory in a systematic and rational form.

The accidents liable to be encountered in the administration of anæsthetics are—syncope, cardiac failure, shock, asphyxia. There are, of course, many other incidental or accidental happenings which have nothing to do with the quality of the anæsthetic or condition of the patient, but which come entirely from carelessness or bungling on the part of the operator or his assistant. These we will not take time to consider as they are such palpable errors of judgment or evidence of incompetency that this paper would not be long enough to enumerate and explain them, and no classification would hold them.

Syncope is the sudden lowering of the blood pressure to the extent of producing cerebral anemia and unconsciousness. The blood pressure may be lowered by the heart itself; (1) by the lessened force and frequency of its beat; (2) by the action of the depressor nerve on the vaso-constrictor center, inhibiting its action to make it accord with a feeble or depressed heart; (3) by emotional excitement or shock which cause inhibition of the vaso-constrictor center; (4) by the action of an anæsthetic on the heart, producing a direct depressing effect upon the heart muscle or ganglia, and through its afferent depressor nerve an unusual effect is produced on the already excited vaso-motor center.

In syncope the manifest symptoms are sudden blanching of the skin, relaxation of the muscular system, apparent unconsciousness and feeble pulse. The respiration is continuous but shallow. The patient has neither power nor inclination to stand or sit upright, but falls limp and relaxed. These symptoms are due to the depleted or clogged condition of the blood supply in the central nervous system. Usually the blood collects because of gravitation in the abdominal vascular system, which is largely relaxed and dilated. Sometimes there is lack of tone in the arterial system and consequent stasis in the arterioles and capillaries. Evidently then the remedies indicated are such as will restore the relaxed arterial and cardiac systems, and supply the brain with proper nutrient blood. The force of gravity has much to do with the depleting of the brain, especially if the patient be standing or sitting upright. When the extensive vascular system of the abdomen is relaxed it is capable of containing a large part of the entire blood supply of the system; and in syncope the blood quickly finds its way to this part of the body, causing a depletion of the more elevated portions of the body. In order that this condition may be corrected the patient must be placed in a recumbent position and if possible with the head a little lower than the body, but in an easy and natural position. In addition such remedies should be administered as will increase the power of the heart beat; oftentimes simple reflex stimulation is all that will be needed. Draughts of cold air, washing the face with a towel or sponge wet with cold water, the inhalation of volatile irritants such as spirits of camphor or aqua ammonia. If the syncope is more profound and does not yield readily to these agencies, nitrate of amyl will usually give quick response. This is a poisonous drug and should be used with discretion. It is ordinarily administered in from 3 to 5 drops, by placing it on a napkin or handkerchief and allowing the patient to inhale three or four times of the vapor from the napkin held a few inches from the nostrils. If used in this way and then withdrawn there is a decided quickening of the heartbeat and of respiration. But if its use be continued its action would be harmful, as it produces further dilation of the arterial system. Its use would be indicated in syncope from shock in patients of average good health where the arterial tone was normally good. In chronic invalids suffering from diseases which have impaired the circulatory and nervous systems, and where the patient does not quickly respond to reflex restoratives and there seems to be no continuous improvement under the most active reflex stimulant, a restorative having a more positive and continuous action is indicated. Such a remedy we have in tincture of digitalis, which is a powerful heart stimulant and also excites the vaso-constrictor nervous system. The action of digitalis is to render the heart-beat somewhat slower but of very much more force, at the same time its action upon the vaso motor constrictors contracts the arteries of the abdomen so that they drive the venous blood back to the heart and lungs and by raising the blood pressure throughout the entire system the normal blood circulation is restored, and consequently its function. Digitalis, either by direct action or because of its action upon the circulation, causes more or less quickening of respiration. There are two preparations of digitalis which may be used—the alcoholic tincture and the alkaloid digitalin. The tincture is preferable, as digitalin is a more or less uncertain compound and its use is sometimes attended with considerable local irritation and the results are not as satisfactory as the tincture. The dose of digitalin is 1-50th of a grain well diluted. The dose of the tincture is 20 to 30 drops injected hyperdermically into the arm. When using digitalis the patient should be kept quiet and in a recumbent position, as any effort on his part to rise will bring on syncope, by the effort made in rising and the gravitation of the blood to the abdomen and extremities. The patient should be kept warm, and the beat of the heart may be very much increased by the application of cloths wrung out of very hot water and placed on the chest over the heart.

In certain diseases more or less caution should be exercised in the application of restorative remedies, otherwise fatal results may follow. All diseases of the arteries, anurisms, atheromas and fatty hearts would contra indicate excessive excitement of the circulation, because of possible hemorrhage or apoplexia.

Cardiac failure may imply more or less depression of the heart function or entire cessation. It is due to the action of various depressing agents on a normal or good heart, or more frequently to these same depressing influences on a heart weakened by disease or impaired by congenital or accidental defects.

Cardiac failure of a sound heart has been sufficiently considered under syncope. But the action of drugs upon a diseased or deformed heart are sometimes very prompt and baffle all attempts of restoration or resuscitation. Valvular and some congenital deformities are not liable to lead to cardiac failure, even under somewhat prolonged depressing anæsthetics, but such diseases as fatty degeneration, indicated by a feeble and irregular action, lack of power, interrupted breathing, etc., are very unfavorable indications for a depressing anæsthetic, such as chloroform. Cautious practitioners will decline to administer such anæsthetics as are liable to produce excessive heart prostration when the heart is known to be weakened from disease. But it sometimes becomes necessary to make use of these depressing anæsthetics even when the conditions are present; or they may be so obscured as not to be recognized by the operator.

There usually accompanies such conditions more or less disturbance of the circulatory system, and may be also considerable nervous disorder, and the effects are in some respects similar to syncope, but more desperate. There generally occurs prompt depression of the circulatory and respiratory functions with their peculiar symptoms, and in fatal cases death occurs very promptly with little or no chance for the application of restoratives, and efforts to revive the patient will be futile, where there is a tendency to impaired circulations from disease. The restorative remedy should precede rather than follow the administration, and this practice is especially indicated in the conditions here spoken of. The use of alcohol in the form of whisky or brandy is strongly advocated for this condition. It should always be given before the administration and never afterward. The benefit from it is not so much its stimulant value, but its strengthening or tonic effect enables a weak heart to endure the depressing action of the anæsthetic without succumbing. Some authorities advocate one to two ounces given a short time before administering the anæsthetic, others go so far as to make the patient comfortably drunk.

More definite stimulation and fortification of the vital organs is obtained by preliminary administration of digitalis for a day or two previous to the administration, or hypodermically a few hours previous. If accidents occur after these precautions, all that can be done is to withdraw the anæsthetic and apply such restoratives as are indicated. If the heart is affected the stimulants mentioned under syncope—recumbent position, reflex stimulants, hot applications over the heart, and digitalis hypodermically. If there be respiratory complications, sulphate of strychnine 1-50th of a grain in one drachm of water, hypodermically. In some cases artificial respiration may be indicated.

The next dangerous condition is known as "Shock." This term seems to have a more or less wide application, and its seriousness will depend upon its form and extent, and also upon the physical condition of the patient. In many cases there is a condition resembling or tending toward shock, produced upon healthy, young or timid patients by fear. It may terminate in syncope or asphyxia, but usually the application of the anæsthetic produces sufficient excitement and comfortable feeling to ward it off and overcome it entirely. There is a condition known as "traumatic shock," produced by injuries, during which it is very questionable whether an anæsthetic should be employed even to lessen the pain of large operations. Again there is a condition of shock which occurs during the administration of an anæsthetic, which is produced because of painful impressions made upon the vital nerve centers by the afferent nerves from a tissue upon which the surgeon is attempting an operation, without waiting for complete anæsthesia. This occurs because these nerve centers are already much depressed by the anæsthetic, but are still irritable, and when the impression comes it makes so strong an attack upon them that they succumb very quickly. Chloroform and cocaine anæsthesia produce this form of shock oftener than ether or nitrous oxide, because the former irritate and depress the nerve centers, while the latter excite and stimulate them. The symptoms of slight shock are confusion, giddiness, pallor, tumultous heart-beat, spasmodic breathing, sometimes profuse sweating. Generally these symptoms will pass away without the application of remedial agents. The anæsthetic should be withdrawn, the patient put in a recumbent position and warm wraps applied to the body, clothing should be loosened and mild reflex stimulants applied to the face; fanning, and rubbing or stroking the hands; warm applications to the feet, and warm tea if the patient can drink without strangling. In severe shock there is pallor, fainting, coldness, trembling, small fluttering pulse, great mental depression, incoherent speech, cold sweat, nausea, vomiting, and often great reduction of temperature.

There is great difference of susceptibility of patients to shock, and of the same person at different times. As a rule young, full blooded and active people are exempt from shock under anæsthetics, while people inclined to faint, nervous and enemic people are more susceptible. Sometimes secondary effects follow severe shock, due to the powerful impression made on the nervous system. They take the form of headache, sleeplessness, disturbed mental function, chorea (irregular convulsion in the limbs), cardiac and vascular disturbances, irregular breathing, and general mental and physical depression.

We cannot positively affirm that drugs, such as we use as anæsthetics, produce all the features of surgical shock, but the symptoms above outlined so closely resemble the toxic effect of cocaine that we may be justified in treating these effects on much the same principles as shock from a traumatic injury. Anæsthetics produce inhibition of the vaso-constrictor nerve centers and produce syncope, and large doses of chloroform or cocaine produce paralysis of the central nervous and vaso motor systems producing severe shock and often fatal effects.

The treatment indicated for severe shock is the same as above indicated in prdinary shock. In addition stronger reflex stimulation and the use of stimulating anemas and hypodermic injections to meet the indications; digitalis for failure of the heart and strychnine for respiratory failure. In shock from injury attended with pain, ¼ grain of morphine should be given. This would be indicated in shock from the administration of cocaine. As morphine counteracts the tendencies of cocaine at almost every point, it should be used in all formulæ for hypodermic applications of cocaine as a prevention of the toxic effects of cocaine.

Asphyxia is the most common accident encountered in practical anæsthesia, and in many instances the most difficult one to manage successfully.

It is usually defined as "Suspended Animation." This does not convey much idea of the way life is suspended, and we shall need to consider its characteristic action to get a clear conception.

Asphyxia, in general terms, is produced by paralysis of the respiratory nerve center and may occur from doses of toxic drugs, such as hydrocyanic acid and carbolic acid; or from overdoses of various anæsthetics, chloroform, etc.; or from the accumulation of venous blood in the circulatory system. These causes are more specifically stated by Harley, in an orderly system to be—

First, the exclusion of air from the lungs by various obstructions to the air passages, such as pressure on the chest or throat, smothering, paralysis of the respiratory muscles because of injury to the spinal cord, wounds into the chest admitting air, foreign bodies in the fauces or larynx, diseases obstructing the air passages, tumors, œdema of the glottis, accumulated mucous, drowning, etc.

Second, exclusion of oxygen from the lungs by the inhalation of harmless gas, such as anæsthetic vapors. In the inhalation of nitrous oxide, all oxygen is excluded from the lungs, and that which the blood contained becomes used up and converted into converted into carbon dioxide, which is not destroyed by the nitrous oxide, but circulates as a poisonous element to depress the function of the vital nerve centers.

Third, the inhalation of corrosive or poisonous gases or vapors, such as chlorine and carbonic acid gas.

From this it will be seen that these conditions may be present or result from the use of many of our general anæsthetics. The venous or poisonous blood, together with the depressing anæsthetic, cause profound impression to be made upon the vital nerve centers. The anæsthetics are present first and produce their characteristic effects, first of excitement and then of depression of all the higher nerve centers, according to Jackson, in the order of their organization. The highest, the cerebrum first, then the cord in its sensory function, then the special nerve centers of the medulla oblongata, lastly the motor nerves and muscles.

During this regular action of the anæsthetic the blood is continually becoming venous in character for want of oxygen and giving no support to these nerve centers and muscles, and what is worse even acting as poisons, causing suddenly the function of the life center to stop and consequently of the vital organs controlled by it. Direct paralysis of the function of respiration and circulation would occur in this way and suspended animation is the result. It is also probable that the heart, arteries, lungs, and the other vital organs of the system are greatly influenced by the circulation of this venous blood. The heart muscle and the vaso-motor nervous system would undoubtedly be affected by it and the circulation would relax, from muscle and nerve poison, producing heart failure and syncope combined, also local effects in addition to the central influence of the anæsthetic and poisonous circulation. We can then state our definition of asphyxia with more clearness, as due to the direct action of a depressing anæsthetic, and of vitiated blood upon the respiratory, cardiac and other vital nerve control centers, and to the local poisonous effects of venous blood circulating in the arterial system, depriving the tissues and vital organs of needed sustenance. Asphyxia may be produced in any one or all of the above ways. The peculiar selective action of different anæsthetics are taken into account when these symptoms appear, and all means adopted for restoration or resuscitation must take into account not only the manifest symptoms, but the peculiarity of the drug action and the condition of the patient, as treatment will depend largely upon these considerations. But in asphyxia there is one symptom always prominent and demanding immediate treatment. This is failure of respiration.

There are three methods of resuscitation employed in asphyxia. First, remove the anæsthetic and also remove any obstruction to the admission of air freely. Second, employ artificial respiration and possibly reflex stimulants. Third, administer restorative drugs, either by mouth if possible, hypodermically or by enemata. If there is any apparent or suspected interference with the air passages to the lungs, it should be promptly removed. Foreign bodies may become lodged in the trachea or larynx, such as vomited matter, false teeth, extracted tooth, mouth props, mucous, etc. These are sufficient to continue this asphyxia, if not removed, If the muscles of the respiratory apparatus, especially of the glottis, are depressed, and there is failure of this function, the head should be thrown back, "and, with index fingers of each hand upon the corresponding cornua of the hyoid bone, whilst the middle fingers rest upon the angle of the jaw, then press forward and upward, the same force serving to extend the head upon the neck; if this fail to open the glottis, by means of a tenaculum, thrust far back into the base of the tongue, draw it forward."—(Wood). If some foreign substance has become lodged in the air passages, and owing to the impossibility of recovering it, as sometimes occurs because of the powerful occlusion of the jaws, the operation of laryngotomy or tracheotomy will have to be performed.

Laryngotomy is a simpler operation than tracheotomy, and should be made by the operator where such an operation is demanded to save life and no surgeon is at hand to perform it. This operation is made, according to Errichsen, "by making a vertical incision in median line between the sterno-hyoid muscles, about an inch in length, exposing the crico-thyroid membrane, which is subcutaneous, then perforating this membrane with a transverse cut with an ordinary scalpel." The only danger is from hemorrhage, in case the transverse cut is made too long the anterior jugular vein may be severed. Artificial respiration can then be set up until the normal function is restored.

If no impediment to respiration exists in the air passages, reflex stimulants are indicated; the use of volatile irritant vapors, such as ammonia, nitrite of amyl, rubbing the face until warm and then dashing cold water upon it, and if insufficient accompanied with artificial respiration. When artificial respiration is indicated, it will usually suffice to simply raise the patient's arms and then bring them down against his sides, so as to compress the abdominal walls. In raising the arms the air is brought into the lungs and the compression again forces it out. These motions kept up at about the regular rate of breathing will induce natural respiration. In some cases where there is entire collapse, a more complete and systematic artificial respiration will need to be used. The Sylvester, Hall, or Howard method, one or the other, are generally adopted. These methods are so familiar that no description need be given of them here. In practicing artificial respiration, do nothing roughly or excitedly. The respirations should not be made over 15 per minute, and compression rather than concussion should be aimed at. The administration of drugs to excite the respiration, by affecting the respiratory center, is one of the most approved methods of resuscitation. The best drug for this purpose, according to Wood, is strychnine. It should be given in the form of sulphate of strychnine in 1-50th grain in one drachm of water, injected hypodermically. If the respiratory centers are not too deeply paralyzed this will excite them and renew the respiratory function. Digitalis is sometimes used, but it has no specific respiratory stimulating function, and any benefit it may have would result from its action upon the heart. If there be also heart paralysis, both drugs should be given.

There are many other remedies advocated as restoratives and resuscitants, and they are used with a measure of success, but our space and time would not permit a discussion as to their comparative merits. My effort has been to briefly outline the conditions and their nature so far as this can be made out, and to class with each condition the most approved remedies.

If it be considered wrong for one who does not understand the nature of the action of anæsthetics to administer them, it certainly is wrong for any one to administer any anæsthetic without providing adequate restorative remedies, and having them conveniently at hand in case they are required, and for this purpose I would propose the following list of remedies to be kept in a special apartment or cabinet, for those who contemplate the administration of general anæsthetics:

A wide mouth two ounce bottle, filled one-half with cotton saturated with ammonia; 2 oz. bottle of aqua ammonia; 2 oz. bottle of aromatic spirits of ammonia; nitrite of amyl in 5 drop tears; one-half pint of whisky; one ounce of tincture of digitalis; sulphate of strychnine in one fiftieth of a grain tablets; caffeine in three-grain capsules; two, one-drachm and in good working order, hypodermic syringes; a small galvanic battery; tongue forceps; gag for opening the mouth; pair of long-handled pharyngeal forceps; tenaculum hook; an instrument for laryngotomy, scalpel, tenaculum hooks and tracheotomy tube.

DISCUSSION.

Dr. A. W. Diack: It is very rarely that we come in contact with the more serious collapsed conditions, these come into the hands of surgeons in cases where more dangerous operations are performed. Then, up to the present time, we have confined ourselves almost entirely to nitrous oxide, the effects of which are not so serious. But we all realize that with the introduction of cocaine we are more liable to meet with such conditions, especially syncope and heart failure. The paper to which we have just listened is exceedingly valuable, if for nothing more than the pathological phenomena so clearly set forth. There are two additional conditions which I would mention.

Cases of epilepsy, just after being operated upon are often thrown into a tetanic state—that is spasm of all the muscles of the body; this state for the time being is very alarming, as those who have witnessed it are well aware. My treatment would be nitrite of amyl, that being considered a specific.

Sometimes extreme nervous persons will exhibit symptoms so closely resembling cardiac failure that it is only after the usual remedies are applied without effect that we discover the condition to be hysteria instead of shock. My treatment of an ordinary case of shock is to use aqua ammonia. It is harmless and in the ordinary cases with which we have to deal effective. If something stronger is needed I use nitrite of amyl. We are here dealing with a remedy that shoots both ways—especially in cases where the patient has weak circulation. This drug has an effect upon the heart in so far as it allows inhibition. It has a depressing effect however and is not a stimulant. If this does not have the desired effect, I inject aromatic spirits of ammonia or brandy; brandy is the safest. Give hypodermically twenty drops with about one-sixth of a grain of morphine, thus obtaining the combined effects of morphine and brandy. Digitalis I would give shortly after the brandy. In very serious cases I should call in a physician, if for nothing more than to take the responsibility. If a death occurs in our chair we have no right to sign a death certificate and a coroner's inquest must be held,—a somewhat embarrassing thing to happen in one's office. Such a thing will in public opinion do much toward lowering the esteem in which we may be held. Therefore call a physician.

Dr. Hoff has spoken almost entirely of the pathological conditions. I would like to say a word about preventative means. We should look at the causes which bring about those conditions. Persons often faint from fright, mere nervousness. This can be overcome by gentle manipulation; often it is best not to let the patient sit in the chair at all after the operation. Bromide of potassium is useful here also. Again, sheer weakness—from disease or old age—will often produce heart failure. Such cases should be treated with stimulants or morphine.

In traumatic shock, as for example, when the nerve or remnants of the pulp have been extracted without an anesthetic, there seems to be an interval of a normal condition a few moments after the operation, followed by syncope. During this interval attract the patient's attention—give her a glass of water and tell her to take a long drink, get her mind fixed upon something outside of herself. Many times I have avoided syncope by this method.

In regard to traumatic shock just before the anesthetic period, I have doubts as to whether there is such a thing. Those most apt to suffer from syncope are patients whose daily occupation is hard manual labor, where the muscles are exercised all day long. Sudden collapse is more liable to occur in such cases than in any other, unless it be cigarette patients.

Dr. W. L. Williams: I do not think dentists need ever use very powerful anesthetics. Nitrous oxide and cocaine answer our purpose. However it is well for the dentist to be qualified to take care of patients should they manifest dangerous symptoms. A novel method employed by a medical professor for restoring a patient after the administration of chloroform struck me as very useful. He placed the patient over his shoulder, back to back, with face down, and with the patient in that position walked quickly about the room. This, he claims, empties the ventricles of the heart, clears the throat and starts the heart to beating.

Dr. Carrow: I do not recall that Dr. Hoff gave in his list of restoratives sulphate of atropine, to be given hypodermically, in cases of extreme shock; if he did not mention it I would like to say that I have been very much gratified with the results of this drug upon the motor system.

The suggestion just offered by Dr. Williams of inverting the patient is a most reliable remedy and one always at hand. I have performed one or two operations upon patients while they were in that position. One was the case of a little child too young to allow me to make use of local anesthetic, I used chloroform. During the administration of the anesthetic, the child gave every evidence of dying. It was inverted, and it began to breath again, but before it had come entirely out of the influence of the chloroform, I performed iridectomy. The child was out of the influence of the anesthetic while I was still performing the operation. Of course, by the use of a tilting chair, we can get a similar effect, but it is better to suspend the patient.

Dr. Taft: The question of fortification of the patient before performing operations is one not to be overlooked, indeed it cannot be emphasized too strongly. Patients should be thoroughly examined; one should become acquainted with their idiosyncracies, should make a study of the constitutional conditions, and such prior treatment given as may fortify against disastrous results.

In connection with the subject of inversion of the patient, I will cite a case described by Dr. Jay, of Richmond, Indiana. He had administered chloroform, there was a very sudden sinking away, and it was evident death was very near that patient. He inverted the patient and soon there seemed to be a complete recovery. But not long after the dentist noticed a blanching of the face; he immediately resorted to inversion and again carried his burden about the room. This procedure he carried on at intervals for perhaps two hours and a half, and finally succeeded in bringing about complete restoration.

In my own practice during the early days of chloroform, I had rather a peculiar experience. A healthy, robust looking girl came to my office to have some teeth extracted. I called in a physician and she was given chloroform. She seemed to recover all right, but in about fifteen minutes she began to smile, then to laugh, and then to laugh hysterically, and finally she went into convulsions. We succeeded in bringing her out of that condition. But not long after she again began to smile—to me a most sardonic smile—then came heavy stertorous breathing, and then she fell into a sleep. For three days these various conditions were gone through with. Even on the third day she had two or three slight attacks, but after that she seemed entirely recovered. I think there must have been a predisposition to hysterical condition that the chloform brought out.

But that was in the early days of chloroform, when the drug was not so well known as now.

There is one point we should bear in mind. Because we have so many good methods of restoring patients, we should not go on carelessly giving anesthetics, confident that these methods will answer in every emergency, but in many cases preventative measures should be employed, as I before stated.

Dr. Long, Monroe, Mich.: An ounce of prevention is worth a pound of cure. The operator should be on the alert and as soon as there is the slightest sign of collapse he should administer restoratives, even though the symptoms are not very alarming. This is one of our strongholds, I think.

CHLOROFORM AND ETHER.*

BY C. G. DARLING, M.D., ANN ARBOR, MICH.

Nearly half a century has passed away since William G. Morton, an enterprising dentist of Boston, first made use of ether as an anesthetic, and scarcely less time has elapsed since James Y. Simpson and his friends sat down together to make a practical test of the anesthetic properties of chloroform.

That these anesthetics were enthusiastically received and used by the medical and dental professions we can well believe, and that they have so long maintained the place which they now hold in the practice of dentistry, when so many local anesthetics have been brought to notice, is a lasting testimony in their favor.

The fact that chloroform was first used in Europe, may have influenced the profession in that country to stand so strongly for it and prefer it to ether, but that preference which at one time seemed to be gaining a strong foothold in the United States is fast giving way and chloroform no longer maintains the place which it once held with ether.

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*Read at the Michigan State Dental Society, June, 1894.

That these anesthetics were at first used indiscriminately and with little knowledge of the process by which they produced the anesthetic effect much less the cause of alarming symptoms is fully proved by the numbes of deaths which were soon brought to notice, and the energetic manner in which physicians began to inquire into the cause of death from anesthesia.

In order that we may judge correctly of the importance of anesthesia to the profession, I will quote from an edition of Fergusson's Surgery, published in 1853:

"A vast and important change has come over the department of operative surgery since the last edition of this work was published. The discovery of anesthesia as a means of causing insensibility to pain during the performance of surgical operations has been made in the interval and now instead of wild outcries or stifled screams and groans coming from the patient under the surgeon's instruments, he may be made to lie as quietly as if in a calm sleep, or possibly during the most painful applications of the knife under other circumstances, he may be mentally engaged in the most pleasing associations of thought or singing or humming by snatches some favorite air."

Still further in this chapter he mentions the danger and the fact that deaths have already occurred from its use.

The giving of an anesthetic in those days was entrusted to a man of large experience, one who was able to judge of the condition of patients and the proper method of administering the anesthetic. The fact that now and then a patient would die while the anesthetic was being administered, lead to extensive experiments, that some chemical agent might be found to take the place of chloroform and ether, an agent that would be a good anesthetic, but at the same time not dangerous to life, but the work did not meet with good success, not even to the present day.

There have been hundreds of deaths reported in those 48 years, to say nothing of the large of number of deaths which nothing has been said.

Lyman has collected 323 cases of death from chloroform, 35 of these the anesthetic was administered for tooth extraction; 20 of these died during self-administration. Only 27 deaths from ether had been reported before 1881, none of these from tooth extraction, probably because it was so little employed for that purpose. 130 deaths from chloroform were reported from 1880 to 1889. 9 cases were reported for the year 1889 in the journals. One case was in a dental office. The dentist was sued for $5,000, but fortunately for him the jury disagreed.

Perhaps the latest and most valuable statistics concerning anesthesia are those reported by Gurlt in the *Archives für Klincal Chirurg*, 1893. These cover 50,062 cases of administration, with 11 deaths, being 1 death to every 4,551 cases. All the general anesthetics except nitrous oxide are included in this list. The average of chloroform was 1 death in 2,097 cases, while from ether it was 1 in 14,646 cases, and this patient died in three hours after operation of amputation of both forearms, before recovery from the shock of the accident had taken place. The writer concludes his report by saying:

"These quotations leave no doubt that we possess in ether the most harmless and most efficient anesthetic for all purposes, and that it is our duty wherever human life is concerned, to return, when our better judgment tells us, to that anesthetic with which the era of surgical anesthesia opened, and to abandon those that have so often endangered life."

Dr. Ormsby, of Dublin, thus graphically describes a death from chloroform which he saw administered: "The man gave but two or three inspirations when he died as suddenly as if shot through the heart. There was no sign of impeded breathing, no pallor of cheek—in fact, no warning whatever. Never shall I forget the consternation of all concerned; and no wonder, for here was a man in the plenitude of life and apparent vigor, cheerful in spirits, changed with the appalling suddenness of a lightning flash, into a corpse. All means of recusitation were promptly resorted to, but in vain, the man was dead."

Yet he tells us that the man had been examined and his heart found perfect but a few moments before the anesthetic was administered, and the reason assigned for giving chloroform was that he behaved badly under ether, which had been administered for some previous operation. This case describes what takes place in a large majority of deaths from chloroform.

The findings of the Hyderabad commission concerning the use of chloroform have become so well accepted in a general way, that I will take from them freely and make the necessary comments afterward.

The first committee appointed by the Nizaims government, arrived at the conclusion that chloroform arrests the respiration befere the heart's action. The *Lancet* wonld not accept these conclusions and a second commission was appointed with a representative of the *Lancet* as a member to test the conclusions of the first, and they were found to be correct.

The object of this commission may be briefly stated, to test the safety of chloroform in comparison with ether and A. C. E. mixture. The result of the anesthetic when pushed to a dangerous degree. The liability to syncope by shock, or fatty degeneration of the heart, also the effect of anesthetics on different animals.

While the administration of anesthetics to animals can hardly be considered a fair test for their effect on man, we will consider their conclusions. Chloroform freely diluted with air, when administered, brought about a gradual fall in the blood pressure and the more diluted was the anesthetic the less rapid was the fall; this fall did not cease when the chloroform had been stopped, because of absorption of residue in the air passages. Respiration may therefore cease after the chloroform has been withdrawn. Struggling causes rapid inhalation and as may be expected there is rapid fall of blood pressure. The close application of the cone at this time also increases the danger.

The controlling action of the vagus upon the heart is its safeguard, it is the temporary exhaustion of the vagus after stimulation that proves dangerous. Their experiments give us no new light upon the cause of primary syncope. The value of pulse, color, temperature, pupil, and conjunctival reflex have received little attention at their hands. While fear and shock, such shock as comes only to the human body, largely it may be because of anticipation, cannot well be studied upon animals, although their experiments contrasted markedly with those occurring in the human subject under similar circumstances. That the danger depends largely upon the dose and that as in other remedies no two persons require the same dose, is probably true, it should then be administered according to the well defined rules which were laid down by the commission, which are in substance as follows:

1st. The recumbent position on the back and absolute freedom of respiration are essential.

2d. Strict attention to the respiration is necessary to prevent asphyxia when the patient is not in the recumbent position.

3d. If the patient struggles, be careful not to interfere in any way with respiration, when it becomes necessary to hold him down.

4th. Any apparatus which is made to fit the face is an element of danger in the administration of chloroform, and that method of administration only should be used that will admit an abundance of air.

5th. At the commencement of inhalation the cone should be held at such a distance from the mouth or nose as will not cause excitement, struggling, or holding the breath. Or, if these occur, the deep inspirations which follow may cause an over-dose. When the patient begins to breathe quietly the inhaler will be brought closer to the face, provided that it does not interfere with respiration. When the patient struggles, cries, or holds the breath, a little fresh air should be admitted, for the deep inspirations which follow, as under such circumstances, one or two inhalations of chloroform may be sufficient to produce complete insensibility. The patient is ready for operation when the corneal reflex is abolished, that is, there is no response when the eye is touched with the tip of the finger. He is kept under the anesthetic by occasional inhalations and should not be allowed to recover sufficiently to struggle or resist. If we wish to avoid death from surgical shock or fright, the operation should not be commenced until the patient is fully under the influence of the anesthetic. The administrator should watch the chest and abdomen and note each respiration. If there is any difficulty of breathing, or the breath is held, the inhaler should be removed until the breathing is again natural. When this does not promptly take place the lower jaw should be pushed forward, the tongue drawn forward, the head lowered. Should this not be sufficient, artificial respiration should be commenced and continued until the breathing is once more natural. Morphia by subcutaneous injection may be given before the anesthetic in prolonged operations. Alcohol may be given to steady the nerve and increase the confidence.

The commission ventures the statement, that if these rules are strictly followed, *chloroform may be administered with absolute ease and perfect safety.* Without doubt this statement has increased the confidence of the medical profession in the use of chloroform as an anesthetic, for we find that in the last two years the death rate from this anesthetic has increased.

The person who is to administer ether should provide himself with a properly constructed cone. One that admits enough air to the respiratory passage to sustain life, not such a large amount as will too much dilute the vapor of ether, as this will greatly retard anesthesia. When a cone made from cloth and is wet, the border must be lifted from time to time to admit fresh air. The Allis inhaler is perfectly safe and the amount of air which enters can be regulated by closing the top. The anesthetiser should provide himself with a forceps for drawing the tongue forward, a gag for separating the jaws, and a mounted sponge for cleansing the pharynx of mucous, for in some cases much mucous will collect. He should have previously examined the heart and lungs to see that they are in a proper condition, and it is always well when there is any suspicion of disease of the kidneys, to have the urine examined, because a fatal suppression now and then takes place, especially in cases where the anesthesia is prolonged. The respiration should not be interfered with in any way, all constricting bands of clothing about the neck and waist should be loosened. The patient should then lie down upon a couch, table or chair which will let him assume a recumbent position. No food should be taken for at least four hours before administering ether, because of the liability to cause vomiting. Milk also should be prohibited, as it may add to the danger.

It is always well to explain the action of the anesthetic to the patient, that the first inhalation may cause coughing and a feeling of suffocation, not at all dangerous and that it will soon wear away. He is instructed to take deep inhalations and put away all fear.

When the operation is a short one, or the operator works rapidly, primary anesthesia will suffice, and with a good patient who will obey instructions, the operation may be completed in four minutes from the time of beginning the anesthetic, but the word must be given at the proper moment or the opportunity is lost until complete anesthesia is induced.

For complete anesthesia a large amount of ether is applied to the cone, the patient is instructed to breath deeply and rapidly, not even a breath of unnecessary air must be allowed to enter, but an atmosphere heavily laden with ether must be rapidly inhaled by the patient. When however, the operation is quite extensive, full anesthesia is to be induced, this can be determined by raising the eyelids without resistance or touching the cornea without response.

Ether anesthesia when complete will last from two to five minutes, much longer than chloroform. Thus giving ample time to perform an extensive extraction without renewing the anesthesia. It is always well to let the patient become slightly conscious after the first profound anesthesia, in order that the blood falling back into the mouth may not interfere with respiration.

I have seen patients sufficiently aroused to open the mouth when requested and have several teeth drawn afterward, yet declare that they felt no pain.

The blood need cause no trouble if the patient's head be turned to one side and a sponge put down between the teeth and cheek to take up the blood as it flows to the lowest part of the mouth.

No one should administer an anesthetic until he is fully acquainted with the dangers which he may encounter and be prepared to meet them. Death may take place when anesthesia is complete, by the tongue falling back over the epiglottes, thus preventing the entrance of air into the lungs, in this case the tongue should be quickly and forcibly drawn well forward. Again, the muscles of respiration may be convulsed or relaxed. The heart continues to beat but the breathing has ceased. First be sure that the air passages are clear, then begin artificial respiration.

I know of no greater danger in ether anesthesia that that of vomiting large pieces of undigested food, which, instead of being ejected may fall back and close the trachea, thus preventing the entrance of air.

When the patient attempts to vomit, he should be turned to one side and the vomited matter rapidly cleared from the throat, if there should be difficulty of breathing, the lower jaw should be thrust forcibly forward by placing the thumbs behind the angles and pressing forward, this serves to carry the tongue away from posterior wall of the pharynx.

No person should pin his faith to a single anesthetic, but be able to judge which would be the better in the case in question. If there is severe cough, bronchitis, or any pulmonary obstruction, ether should not be used. In advanced arterial disease or for very young children, chloroform should have the preference.

Chloroform has generally been stated to be the better anesthetic for operations about the head and face, but ether is used almost exclusively for such operations in the university, surgical clinic and with good effect. The operator has much confidence in its safety and is not constantly interrupted to see if his patient is breathing. I have used ether as an anesthetic a number of times in tooth-extraction, and must say that I much prefer it to chloroform for this purpose. 1st. Because of its safety. 2d. Because anesthesia lasts much longer when the cone is removed

The objection raised against ether, viz: the irritation to respiratory organs. The cost as compared with chloroform, the after effects as nausea and vomiting, can scarcely be thought of when we come to consider the safety. Why should we peril human life for the sake of overcoming a few minor inconveniences. I trust that all who are here to-night will give ether a fair trial in dental practice, if this is done, I have no fear of the result.

NITROUS OXIDE.*

BY JOSEPH LATHROP, JR., DETROIT, MICH.

Nitrous oxide or nitrogen monoxide, or better known as laughing gas, is a colorless, odorless gas at ordinary temperature; but is a clear liquid under a pressure of fifty atmospheres and at forty-five degrees F.

It was first discovered by Priestly in 1775, but its exhilirating and analgesic effects were not noticed until 1800, when Dr. Davy made them known. As an anesthetic it was not used until 1845, when Dr. Horace Wells, a dentist, demonstrated its power of destroying physical pain, and from that time until the present, it has been extensively used by our profession. It is without an equal in minor operations about the mouth, although it has been used in major ones; and patients have been kept under its influence an hour and forty minutes.

The gas can be obtained by reducing nitric acid and is oftentimes formed when copper is treated with the concentrated acid, but when it is made in this way we find so many impurities in it that it is hardly practicable. The usual method of making it, is by heating in a retort pure ammonium nitrate until it decomposes and the gas is liberated, but the heat should not exceed 400 F. for above that bad gas is formed. The ammonium nitrate melts 320 F., and the gas is given off, and very rapidly at 470 F. The ammonium nitrate breaks down into nitrous oxide and water.

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*Read before the Michigan State Dental Society, June, 1894.

We find many inpurities passing over with the gas unless the ammonium nitrate is perfectly pure, chlorine being the principal one, and before the gas is let into the gasometer it should be passed through three receivers, the first of which contains water to cool the gas, the second potassium hydrate to neutralize any chlorine, nitric or nitrous acid, or carbonic acid gas that may be present. The third contains ferrous sulphate, to collect from the vapor any nitric oxide and reduce it to nitrous oxide.

We find that cool water will absorb about 80% of the gas, but on warming it will give it up. The gas has a sp. gravity of 1.527 and will support combustion almost as well as pure oxygen.

The gas thus obtained is one of our general anesthetics, when inhaled in sufficient quantity will produce profound anesthesia. It does this probably, acting indirectly, by interfering with the circulation in the brain and arresting the process of oxidation and tissue change in the nerve cells, which is absolutely necessary for functional activity. The time for its anesthetic effect to be produced varies, and no set time can be given. We have three distinct stages during anesthesia of nitrous oxide: the excitant, narcotic, and anesthetic. We find it first affecting the heart and cerebrum by stimulation, producing the excitement or first stage. In the second stage the cerebrum and reflexes are partially narcotized and the patient becomes quiet and indifferent, with pulse reduced almost to normal, breathing regular and deep, face somewhat flushed. The patient loses conscicusness or inability to talk or think, but the reflexes and motor influences are active. In the third, or anesthetic stage, the cerebrum and reflexes are abolished and the motor impulses impaired The pulse is full and regular, breathing is periodic and interrupted: more or less cyanosis appears in the face and other delicate and vascular parts of the integument, and there is no response to the irritation of the conjunctiva, which is one of the last reflexes affected. The gas is not decomposed in the body but it is exhaled in the same form as inhaled. In the body it is found in the blood and takes the place of the oxygen. Nitrous oxide can not be decomposed in the system, since, the temperature of the body is not high enough to destroy its molecular affinity, and there are chemical affinities met with in the system sufficiently powerful to change it. Experiments also show that the exchange of gases, practically stops after it has been administered for a few minutes and the gas is exhaled in the same form and quantity as inhaled.

The blood of a dog was analyzed after the administration of the gas for one minute and forty five seconds and found to contain

C_2O gas .	37.
O . .	5.2
N_2O . .	28.6
N . . .	7

3 minutes . .	C_2O	36.6
	O	3.3
	N_2O	34.6

4 minutes	C_2O	34
	O	5.05
	N_2O	37

Like ether it kills by paralyzing the center of respiration and not by asphyxia, for we do not have an over amount of carbonic acid gas. The heart center is not paralyzed so quickly because of its characteristic stimulation even to the last.

From its first use until the present time, there are only eleven deaths reported from the administration of nitrous oxide and only five of these can be with any certainty traced to the direct action of the gas. In four only of these was post mortems held, and three were caused by paralysis of the heart and lungs, while the fourth the verdict was asphyxia.

It is the safest of all our anesthetics and in comparison with chloroform we find one death to every 2,500; and ether one death to every 23,000. It can be given to people of all ages and conditions with comparative safety except in fatty degeneration or valvular trouble of the heart, aneurisms or atheromatous blood vessels and to women after the seventh month of pregnancy.

We have after or secondary effects from the use of nitrous oxide, which do not demonstrate themselves for days after the operation, and it is probable many fatal cases will be traced to the after-effects of nitrous oxide, as there is already some evidence to confirm this prediction.

Dr. La Fount warns against the production of diabetes. He reports a case where sugar appeared in the urine and also in his own after the administration of the gas. Dr. Kendelheim died from diabetes which he persistently attributed to nitrous oxide.

While the after dangers of the gas are probably not great, the high blood pressure with venous stasis, which are undoubtedly present during anesthesia strongly indicate that when atheroma or other diseases of the arterial walls exist, nitrous oxide is less safe an anesthetic than ether.

ADMINISTRATION.

There are two forms of apparatus used for storing and administering the gas; one by the gas bag; the other the gasometer. The gasometer is almost universally used, it being the handiest and can be used to a better advantage, for the gas can be better controlled than with the gas bag. It is also more economical and less liable to contamination. The only advantage the gas bag has over the gasometer is that it is portable.

In the administration of the gas to a patient, the mouth piece and hood are used. Some practitioners use the mouth-piece, but the hood, although it has some disadvantages is without doubt preferable. The operator has better control of the patient than when using the mouth-piece, unless he has a skilled assistant, who will take charge of the administration. Many patients object to the mouth-piece because it seems unclean. from the fact that it has been in the mouths of many other people. The other features of the modern gas apparatus are so familiar as to need no further comment here. In brief, a good apparatus should be easily and quickly operated, easily kept in repair, of ample capacity, and more or less ornamental, comely and tasteful, rather than formidable.

If the liquid gas is used the gasometer should always be kept nearly full, so that the gas may be of suitable temperature to administer at any time. When the gas is freshly released from the liquid state it is cold and not of suitable temperature to apply to sensitive mucous membranes.

Sufficient gas should be given to produce complete anesthesia, for there is danger from shock and after effects where complete anesthesia is not produced. In complete anesthesia the reflexes are paralyzed, and irritation of the sensatory nerves by the extraction of a tooth has no effect either upon the vagus or upon the vaso-motor; while in imperfect anesthesia the reflex centers of the heart and circulatory system may be paralyzed because of the presence of the gas in the blood, and the vagus centers not affected; hence, the shock caused by the extraction of a tooth may through a reflex action on the vagus or inhibitory center cause stoppage of the heart, there being nothing to counteract the tendency to faint, syncope may prove fatal. There is however less danger from gas than from chloroform or ether, as the nitrous oxide causes a venous condition of the blood with consequent vaso-motor stimulation and contraction of the arterioles and a rise in blood pressure so that a tendency to syncope through vagus irritation is counteracted.

Strangulation is another thing which should be guarded against, for during the administration of the gas the tongue may fall back into the pharynx and the muscles of the palate contract, thus causing a stoppage of the air passages.

During the administration, the respiration should be regular, full and free, difficult, or irregular and spasmodic breathing are dangerous symptoms, as also is prolonged or indifferent breathing.

The pulse will be quick and nervous at first but as the anesthetic takes effect it becomes full, strong and frequent, finally becomes regular, full and a trifle more frequent than normal.

In giving the anesthetic a third person should always be present, for we have a case on record where the operator was accused and convicted of a crime of which he was probably innocent.

Nitrous oxide is sometimes combined with ether or chloroform, or both, which prolongs anesthesia and when combined in this manner it is known as vitalized air.

On account of the brevity of the effect of nitrous oxide, more extensive operations are undertaken than are justifiable, resulting in severe nervous shock to the patient or bungling operations, causing more or less wasteful destruction of the oral tissues. It would be far better to repeat the administration and attempt only, so much work as may be properly done under each administration at one sitting.

It is important that all valued convenient instruments and restoratives should be readily available. Proper and sufficient instruments for any possible emergency in different extractions are essential, even so are adequate restorative measures.

DISCUSSION.

G. E. Corbin, St. Johns: In relation to the profession of medicine and surgery, and the profession of dentistry, a question of more importance than the one now before us could hardly be raised. Just think for a moment what surgery was before the days of chloroform and ether. Think of calling in the neighbors, when some one had been so unfortunate as to need a limb amputated—calling in several of the strongest men to lash the unfortunate person to the table, while amid the shrieks and groans of the sufferer the limb was amputated. Then think of the possibilities of the present day—of accomplishing all that while the patient is quietly sleeping, and perhaps enjoying pleasant dreams. But while this possibility of performing operations without pain has worked great benefit in some departments of the profession, it is also true that in others it has worked great iujury; and I am sorry to say this latter fact is especially true of our own branch of the profession. In serious surgical operations we can well afford to take the risk of the legitimate effects of an anesthetic; in trifling operations, I think we cannot afford to take such risk. Hundreds and thousands of teeth that might have done good service, teeth that were perhaps better than those with which they were replaced, have been extracted simply because it could be done without pain.

During my early student days, at the University of Michigan, from '52 to '55, I saw chloroform used freely by Dr. Gunn, professor of surgery at that time. I do not know that very much was known about ether then, at any rate chloroform was the anesthetic generally used. At Blakely College, during the winter of '68, I saw many operations performed by the distinguished Dr. Gross, and the anesthetic used was almost always chloroform. It was administered by saturating a towel with chloroform and then pressing the towel tightly over the mouth and nostrils of the patient. Sometimes the patient would exhibit alarming symptoms; he would be rolled over and restoratives applied; then the towel would then be placed over his mouth as before. Often it would be necessaay to partially revive the patient two or three times before it was considered safe to completely anesthetize him, but I saw no serious results arising from the use of this anesthetic. The percentage of deaths, as given in the first paper read this evening, is certainly very serious and we regret it very much. Yet beyond all question in many of those cases, had the operation been performed without an anesthetic, there would have been many more deaths caused by the shock of the operation. I am of the opinion that if chloroform be admistered carefully, that is sufficiently diluted and given slowly so as not to give any more than is needed to produce insensibility, there is as little danger as from the use of ether. If the statement in the first paper, that the anesthetic effects of ether last longer than those of chloroform, be true, it would seem to me that chloroform is the less dangerous, because the vital organs are not acted upon for so long a time. The danger is that one is very apt to give too much chloroform. Of course the effect of this anesthetic upon the kidneys and various other conditions will alter the truth of my general remarks, but so far as its local effect, its effect upon the respiratory organs is concerned, I think chloroform is much less harsh than ether.

Another point. Many times death is caused by strangulation. I remember Dr. Gunn used to refuse to administer an anesthetic in cases where the operation would fill the mouth with blood. He considered there was more danger from strangulation than from the legitimate effects of the anesthetic. Even in quite serious operations about the mouth, he utterly refused to administer anesthetics.

Dr. A. M. Long: I will say the paper just read is one of the best on nitrous oxide that I have seen. It is not an easy task to write on this subject; there is such a diversity of opinion and the experiments that have been made to vary nearly as much as the different claimants vary as to its discovery. While there is a controversy as to the effects and methods and means of administrating nitrous oxide, there shall be none between the author and myself in calling nitrous oxide gas an anesthetic. There have been many circulars sent to dentists, denouncing the anesthetic effects and claiming that it is only "asphyxia." The author has pointed out the action of nitrous oxide on the nervous system, and what nerves are mostly affected; also upon the heart and circulatory system. He has also given the three different stages —excitement, narcotic, and anesthetic. In the excitement stage success depends largely on the operator and the surroundings. He must be composed and have perfect confidence in himself.

Of course we will take it for granted that he has a good gas apparatus, and an inhaler, and that they are in perfect working order, and no air allowed to leak through the tube or inhaler; if air be allowed to mix with gas, it will produce fear and often screaming. The effects and excitement of alcohol is quite different from that of air, it breaks out in a combative or pugilistic form. If I know that my patient has been drinking, I refuse to administer gas until he is free from liquor. It takes but a step aside to increase or modify the action of gas. The inhaler valves must be large, to admit the exhaling and inhaling and they should be free from springs. The receiver should force the gas to the patient, and it should be as easy to inhale as pure air. Inhalers with small inhaling and exhaling valves, and the patient compelled to draw the gas to him with lung force, will produce an unpleasant effect in the excitement stage, and in fact will all through the administration, and a failure will be the result. The small valved inhalers that we find in our markets are more to blame for the suffocating effects; and the deep and irregular breathing, also the blueness which appears in the face and lips, than the gas.

We will admit, from the effects of the gas on the system, that there is some cyanosis visible, but I here repeat, that it is not so well defined where a perfect gas apparatus is in use.

I see the author accepts the theory of the gas replacing the oxygen. I find but two principal theories in regard to the physiological action of nitrous oxide. One theory is that the anesthetic effects are due to the greater volume of oxygen in the lungs than they are accustomed to receive. That nitrous oxide contains more oxygen in action, which produces a stimulating effect.

The other theory is, of insufficient oxidation; claiming that the gas acts principally by occupying the space in the lungs normally held by the oxygen of the air, and to its exclusion, preventing the proper oxidation of the blood, followed by suspended sensation.

The author refers to the combining of chloroform and ether with gas. I have, for over ten years, used equal parts pure alcohol and chloroform, about two drops of the mixture to one gallon of gas.

I know there is a strong prejudice with many against the mixture, but I know where the combination has been tried it has grown in favor. It has been argued that each anesthetic agent possesses properties peculiar to itself. We claim for it that the powerful agents are so small in combination with the quantity of gas that the gas is not impaired by it, and that the chloroform does not get further than the first stage of stimulation, before the gas has produced full anesthesia. I prefer chloroform to ether, as it conforms more easily to nitrous oxide, and is less irritating.

Dr. E. T. Loeffler, Saginaw: For the first year or two of my practice I used chloroform; it worked quickly and seemed perfectly satisfactory. But as I looked into the matter I changed my mind and I now am greatly in favor of using ether, especially when patients cannot be put in a horizontal position; I think dentists are always justified in using ether on account of the position of the patient.

We, as professional men, have a great responsibility in administering anesthetics. Patients come into our offices in a specially sensitive condition. The parts to be operated upon are in an irritated condition and the whole nervous system is sympathetically affected and that is a cause of great danger. We ought on that account to be very careful in administering an anesthetic. Freedom of respiration should always be looked after. Too often patients are hurried into the chair without due precaution being taken. This point of precaution cannot be too strongly urged.

W. P. Morgan, Saginaw: I do not know that I can add anything to what has already been said. The ground seems to have been very thoroughly discussed. So far as the results of anesthetics are concerned, I would rather take the chances of the effect of an anesthetic than that of shock without it. One important point is to gain the confidence of your patient. If the patient thinks the operator is afraid, he too will be afraid, and this element of fear will make the danger much greater. Allow no one in the room to talk and disturb the patient. Before the anesthetic is administered, the patient should be shown how to breathe. Strangulation is usually caused because the breathing is not done in the right way. If short breaths are taken, after one or two it is necessary to take a long breath and that is what causes strangulation; but if the breathing is done naturally there need be no trouble. Just before administering the anesthetic speak a few quieting words to keep the patient's attention away from what is about to be done. I consider it necessary to give the anesthetic in a warm room and the windows should not be opened lest the patient be in a draft. The sitting posture is safer, as there is less danger from strangulation.

DR. LONG, Monroe: We all, I think, believe the introduction of anesthetics to have been one of the most brilliant events in our history, and we all believe in their use. While nitrous oxide is considered one of the minor anesthetics it is not one of the least; I think it one of the greatest and one of the safest to use.

DR. D. WOOLSLEY, Battle Creek: I would like to ask Dr. Corbin what effect chloroform would have upon children from six to ten years of age?

DR. CORBIN: I have administered chloroform to children of all ages and for other purposes than the extraction of teeth--for operations upon the ears and nose. It is only neceessary to bear in mind what effect is desired and then to administer the anesthetic so slowly that such effect can be attained. I cannot conceive why chloroform is not just as safe as any other anesthetic that produces complete anesthesia. I cannot but feel but that there is some danger in every case of insensibility produced artificially. The danger is in saturating the system. Chloroform is so much more powerful than ether, that, as I stated before, one is liable to give too much.

DR. WOOLSLEY: Children we cannot reason with, and when they are suffering we can do nothing with them, and my question was, whether or not the dentist would not be justified in giving a child just a few whifs of chloroform and in this way get over the difficulty.

DR. CORBIN: I think just enough chloroform to quiet the child, to produce unconsciousness, would be justifiable. Of course the less of the anesthetic given the better.

DR. W. H. JACKSON, Ann Arbor: I would like to ask if nitrous oxide is a chemical compound? Does it give up its constituent parts, or does it go into the blood unchanged?

DR. LATHROP: There is a difference of opinion as to that. We used to think that part of the nitrous oxide was assimilated by the system. We, too, used to think that lime when taken went directly to the teeth. I believe that theory has changed and authorities now state that we do not get a direct effect from the lime, but that it must be taken through the stomach in a vegetable form. I think it is more generally believed now that the blood does not take up the gas; it is simply exhaled as pure air.

Dr. Jackson; In nine cases out of ten where death occurs after the administration of anesthetics, it arises from accident rather than from the effects of the anesthetics. The attention of the assistant is often too much centered upon the operator, when it should be centered upon the patient. Many times in my own practice, have I been obliged to stop and run my knife into the throat and pull out the tongue to prevent a fatal accident, the cause of which would in all probability have been attributed to the anesthetic. Then, too, we are apt not to pay enough attention to the clothing; it should be loose enough not to impair in any way the breathing. A careful examination of the condition of the patient should always be made, because a little overstraining of the nerves at the time of administering the anesthetic may cause fatal results. There are three sets of nerves acted upon—the nerves or sensation, the nerves of voluntary motion, and the nerves of involuntary motion. In the susceptibility of those nerves to the anesthetic lies the danger. If the condition is such that the nerves of involuntary motion are acted upon first, where is your patient? Where are you? And there is a possibility of such a condition being met with. It is well to have a third person present when an anesthetic is administered. Should time of danger come, it needs a cool mind—a moment's hesitation may be fatal.

Dr. W. L. Williams, Sault Ste. Marie: I had perhaps a somewhat unusual experience with one case. I kept a patient alive for three weeks longer than he would otherwise have lived by the administration of nitrous oxide. The patient had a serious disease; he had considerable trouble with his heart and was expected to drop away at any moment. In the meantime he suffered with toothache. He came to me to have them extracted. I administered gas and extracted two teeth. He went away from the office feeling better than he had for some time before, a condition which he attributed to the effects of the nitrous oxide. After that, whenever he felt worse than usual, he would come to me to have a little gas administered. He did this at intervals for three weeks; he then went away into the country; while there, after eating a hearty dinner, he was taken very sick and died before he could reach home. His friends thought if he only could have had some gas administered then he would not have died.

Dr. J. Lathrop, Sr., Detroit: I am a believer in nitrous oxide. The two modes of administering it, each has its advantages. That employing the mouth-piece keeps the mouth open when the patient is under the influence of the anesthetic, though I, personally, have experienced little trouble in getting into the mouth of the patient after he has been anesthetized. With the hood I have had a little trouble. Some dentists complain of patients during the first stages of anesthesia becoming excited. I have found it well, when there are signs of distress or nervousness, to admit a little air. Many times I have overcome this difficulty by requesting the patient to breathe rapidly, say fifteen inhalations, before putting the hood to the mouth; the patient will pass under the influence of the anesthetic much quicker and less gas will be needed.

As to the use of cocaine and other modern appliances for producing anesthesia, I think in nearly all cases nitrous oxide might be applied more advantageously. I have sometimes given what the patient supposed was nitrous oxide and extracted teeth without pain (so the patient claimed), when in fact nothing but ordinary air had been inhaled. This method certainly has its advantages, what its scientific effect is I am unable to tell; the results are admirable.

Dr. H. P. Ball: I administered nitrous oxide to a patient. Three days afterwards she was taken sick and has been sick ever since. Her family physician claims the gas was the cause of her illness. I would like to ask if this could have been the case.

Dr. Jackson: That depends on the nature of the sickness. It might have resulted from the operation. The blood clot may have broken down and blood poisoning have been the cause. If this was the cause you should have been called upon to treat it. Every young dentist should study enough of medicine to treat such cases as are liable to come under his hands. If the patient does not call upon you, in such cases you cannot be held responsible for the results. Dentistry is only a branch of medicine. You expect an aurist to treat not only your ears, but your general system; a dentist should treat his patients constitutionally as well as locally.

DR. BALL: I do not think the clot was broken down in this case; so far as I could tell, the symptoms seemed to be such as would be caused by the gas. Some of the doctors say the patient was coming down with some systemic disease, which came out at that time. But her family physician says it was caused by the gas.

DR. F. W. TEMPLE, Grand Rapids: A lady went to a dentist to have a tooth extracted. She was advised to take gas and assured that no harm would result. She took it; there was considerable trouble in restoring her to normal condition, but she finally came to and went home. Just as she was about to ascend the steps at her house she fainted. She was sick for four or five weeks. A corps of doctors attended her; she was delirious for two weeks, but finally she recovered. What was the cause is not known. It is a question whether her illness resulted from the effects of the gas or from some systemic trouble.

DR. CLELAND, Detroit: I have had a few serious experiences with nitrous oxide. The gas had been kept where some drugs were stored and it had taken them up. A new retort was strongly impregnated with a chlorine odor in one case.

In one case where the gas had probably taken up this material I did not notice the odor in the gas itself, but detected it in the patient's breath. She coughed so hard that I was unable to use it; the cough was similar to that induced by sulphuric acid.

A GENTLEMAN: I, too, have had an experience similar to that related by Dr. Cleland. At one time the gas had a peculiar odor, like that of chloride of lime. It caused coughing and irritation. Of course we did not use it.

With regard to patients being taken sick after the administration of gas, I think many such cases could be traced to some other cause than the anesthetic. Many would have been sick had they not taken an anesthetic. I have had patients who were sick after having teeth extracted, although no anesthetic was administered.

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CONTRIBUTIONS.

ELECTRICITY AND "PAINLESS DENTISTRY."*

BY L. E. CUSTER, B.S., D.D.S., DAYTON, O.

No one has told us what it is, yet is an agent in the formation, growth and death of all animal and vegetable organisms; it comes with the light and the heat, giving the breath of life the magic of colors. It is the unseen hand at work in nature, the cause of barometic changes, and the formidable agent which now and then shatters and tears the atmosphere, terrifying you with the crash of its thunder. It is that which transmits the enchantment of a look and the grace of a smile. It lights and heats our homes, it runs our factories and cars, and will soon carry our voice around the globe. In this decade when everything fairly sparkles with electrical phenomena, it is not surprising that an agent which exhibits such a variety of wonders and which promises still more, should find a place in dental practice. At the same time, in the present state of the public mind, no agent can be more delusive in the hands of a fairly skilled dental charlatan than electricity; yet when intelligently used by the careful operator, even in the present limited applications, it goes far toward mitigating the pain of many operations. There is

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perhaps no broader field for the application of the various forms of electricity than in dental practice.

The similarity between the transmission of nerve force along a nerve fibre and electricity along a conductor is so marked that it is quite natural at first thought to suppose it possible to apply an electric current to a nerve force in such a manner and strength as to stop the nerval activity and thus prevent the transmission of sensation. Indeed DuBois Raymond says; "If the galvanic current moves through the nerve in the same direction as the nerve current, the intensity of the latter is increased and the nerve current is diminished in intensity by the passage of the galvanic current in the opposite direction." But the effective application of electricity to the above end as a specific obtundent is so uncertain that with our present knowledge it is not practical. This statement may be a disappointment to some, but is nevertheless true.

The profession has experimented with electrical anesthesia since 1851. At first it created such a furor as to be called the "lightning anesthetic." Many dentists and surgeons engaged in its use, but it was so erratic in its action that it was finally thrown aside by the more intelligent practitioners. It has been used more or less ever since, however, by the charlatans and that class of people who maintain that there *must* be some virtue in so wonderful an agent. They have given it new names, they have put it in new boxes, but whether it is the "electric anesthetic" in a mahogany case or the "electric vibrator" with musical accompaniment, it is the same old faradic current of forty years ago. Its application is painful. According as the current is increased the actual pain is overcome by a greater, the electrical pain. It is a matter of choice with the patient, whether he will have substituted an electrical pain for the real.

The substitution of one kind of pain for another is not professional. The shocking machine which does this is of no real value. Our object is to lessen the pain. When we can successfully balance neural activity by an application of electricity in such a manner as to be painless, as well as effective and practical, then we can speak of such a thing as electrical anesthesia.

It is not absolutely necessary that electricity should be an obtundent itself for admission into dental practice. There are other ways in which it can be advantageously used for reducing the pain of many dental operations, and in this connection I will state that reference to a few electrical instruments of my own device, is not for any commercial purpose. These instruments have all been made to meet some need in my own practice and are here presented as illustrations of the subject at hand.

If with the aid of electricity we can shorten an operation without increasing the pain, we have done a good thing, or if in the same amount of time we can perform a better operation, we are progressive. The constant potential of 110 volts is the ideal current for dental purposes. It is perfectly safe. It furnishes an abundance of power for the engine and heat for the heaviest cautery. It gives the best of light, and is admirably adapted for electrolytic purposes.

The perfection of electric motive power can only be fully appreciated by one who has used it. The demand has been for a sharp bur revolved at a high rate of speed for the painless removal of sensitive dentine. This is perfectly met by the electric motor. It not only gives a much higher rate of speed thán is obtainable by other power, but the variations in speed by means of the rheostat is under the perfect control of the operator. The bur may be immediately stopped or its direction reversed, so that there is little damage to the tooth, gum, or rubber cloth by accidental movement of the instrument. A most important recommendation also of electric motive power is that the body of the operator may be perfectly quiet, so that the control of the hand-piece is much more delicate than where the treadle engine is used.

Electric heat depends upon two factors—the quantity of the current, and the size and conductive power of the conductor. It differs in some respects from heat produced by the combustion of gas or alcohol, and for certain purposes these new qualities make it a valuable agent in dental practice. It may seem that the simple process of annealing gold does not bear upon "painless dentistry," but if the contour of a large gold filling has dropped off by the imperfect cohesion of a smoked, gassed or poorly annealed piece of gold, necessitating a second operation, with all the pain and fatigue that such cases mean, not to speak of the mortification of the dentist, I would say that it has a most direct bearing.

The heat produced by electrically heating a mat of coiled platinum wire is the cleanest, most uniform and most accurately controlled of all forms of heat. The cohesive property of pure gold is supposed to be developed by heating to such a temperature as to drive off the gases condensed upon its surface, principal of which is ammonia. The alcohol and bunsen flame are ordinarily used for this purpose, but who is certain but that better results may not be obtained by subjecting to a heat free from the products of combustion, as well as the danger of smoking and the exposure to unconsumed gases? The electric annealer effectually overcomes these dangers. The heat being derived from electrically heated platinum, one of the noble metals, is absolutely free from gas of any kind. The heat derived from a mat of platinum coils is quite uniform at all parts, so that the gold is not only thoroughly annealed, but to the same degree. It is impossible to evenly heat a piece of gold held with a pair of pliers over a flame of any kind. The thin edges of the gold will be fused while the part between the pliers will be scarcely warmed. "Balling" of gold is due almost entirely to unequal annealing. At a clinic not long ago I witnessed an operator annealing gold pellets with a pair of foil carriers, the points of which were broad as the pellet itself. The result was that the exposed edges of the pellet was a fused mass, while the part between the plier points was not even made cohesive. The result was that the unannealed portion was not cohesive and the annealed portion so stiff that it was with difficulty that enough surface was brought in actual contact to cohere. No wonder such operators lay the blame with the gold! The accuracy with which electrical heat can be controlled also recommends its use for annealing. By means of the rheostat any degree of heat to the melting point of platinum may be obtained. From my experience with the electric annealer, however, I find that cohesion is developed at a much lower degree than at first supposed. It is never necessary to heat even to redness, let alone fusion. The heat may be so low that the gold may be subjected to it for hours or for days even without any injury, and still be highly cohesive. If it were not my own invention, I would say next in usefulness to the dental engine is the electric gold annealer.

The electric cautery was a marked improvement over the actual cautery of years ago. A similar instrument may be used as a root dryer. The heat is not only steadily maintained, but is under the absolute control of the operator. Instead of approaching the patient with the formidable red-hot iron, the instrument is placed in position, the button touched and the heat maintained or varied at will. By a shunt arrangement, the incandescent current may be used for the cautery and root dryer, without injury to the instrument.

Every operator knows the difficulty of throwing a blast from the warm air syringe, without producing pain. It is not accurate in the least. This difficulty may be overcome by the use of electricity. A definite length of coiled German silver wire, of a given size, with current at 110 volts, gives heat which may be accurately measured. If this wire is enclosed in a rubber tube, and through the tube air is forced at a given pressure, it will escape heated to a certain degree. The temperature may be varied at the will of the operator, by varying the heat of the coiled wire by a rheostat, or by varying the air pressure. The calculations being accurate, by this device it is possible at all times to obtain a blast of air at blood heat which will not be painful.

The electric mallet is a time saving appliance familiar to all. In many cases the peculiar blow from this instrument is more agreeable than any other form of malleting. The electric light is a valuable aid in diagnosis, and many times saves drilling and other forms of exploration.

The appliances just mentioned are practical and useful instruments, and are steps toward painless dentistry, but we have just begun the application of electricity in dental practice. I see in the near future an electro-deposition of gold or platinum in the cavity of a tooth, which is not only a preventative of recurrent decay itself, but is a cohesive foundation to which a gold filling may be attached, relieving the walls of much strain. I also see a plating of metal covering the whole crowns of the posterior teeth predisposed to caries, or in a less charlatan-like manner it may be restricted to the fissures and proximal positions.

ANESTHETIZING SENSITIVE DENTINE.*

BY W. H. VAN DEMAN, D.D.S.

Much has been said by the dental profession upon the means of obtunding sensibility of the dentine. It is a matter of the greatest importance, for the fear of pain during the excavation of cavities is probably the most common cause for neglect of the teeth.

If we are to eliminate pain from an operation, we should first study the cause, and the means by which it is transmitted to the seat of realization.

When we examine the dentine under the microscope, we see that from the pulp cavity to the periphery, the tissue is *perforated* by small tubes or canals, having distinct walls; each tube starting by an open circular mouth upon the surface of the pulp cavity, radiating in an undulating course, giving off many branches which freely anastomose or communicate with each other. They terminate either by gradually fading out, by anastomosis, by ending in loops, or in the interglobular spaces. It has been thought by some that these tubes pass into the enamel and cementum, but this has not yet been proved.

Each tube has a definite wall or lining that may be demonstrated even in fossil teeth. These tubes are not mere bony canals in the matrix, but each tube is lined with a definite, delicate, and yet indestructible structure, the "Dental Sheath of Neumann." Rose, has proven this sheath to be nothing more than the remains of uncalcified dentinal ground-substances, which has experienced some chemical change, by which it has become resistant to acids and alkalies.

What are the contents of these tubules? It is not definitely known, that on the inner surfaces of the dentine, or better, the outer surface of the pulp, we have a layer of highly differentiated connective tissue cells, called the odontoblasts, and that through the activity of these cells the dentine is deposited. From these odontoblasts, we find protoplasmic processes of various lengths, extending up into the dental tubules, and here constitute the so-called "Tomes Dentinal Fibres." Some have thought these fibres to come from cells deeper seated in the pulp tissue, below the odontoblasts, but Rose has shown, and his work has been accepted by V. V. Ebner and others, that Tomes fibres are simply protoplasmic processes of the highly differentiated connective tissue cells, the odontoblasts.

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Can such processes transmit sensation? It has been thought they can and do so. By some the odontoblast has been likened to the ameoba. The ameoba is protoplasm which resembles undifferentiated protoplasm of higher forms, the protoplasm has the power of assimulation, conductivity and reproduction. The odontoblast has no such power, they cannot properly be compared at all. One of the most interesting and important facts is, that there is only a single layer of odontoblasts, which remain active throughout the life of the tooth.

We have certainly no reason to believe that the protoplasmic processes of the odontoblasts can conduct sensations. No where in the body does a connective tissue cell have such a function, yet there is no doubt but what the sensitiveness of the dentine is due to the contents of the tubules.

May we not have something more than a protoplasmic process enclosed within each of these tubules? Boll, who has probably done the best work on the nerve ending in the tooth, has traced the fibrillæ from the pulp, up between the odontoblasts, and believes they may extend on into the tubuli. To me this is the rational view. I see no reason why we should not expect such an ending of the nerves in the tooth. There is much work to be done on the peripheral distribution of the nervous system, however, and it would be unwise to assume that we know all about the nerve structure of the tooth.

Sensitive dentine is generally physiological, but we know that it is in some instances purely pathological, and in such cases we have what may be called an inflamed or hyyersensitive condition.

The term inflammation has been objected to by some, because all the phenomena of inflammation, as it appears in other tissues, are not present, or at least are not perceptible. Redness, heat, pain and swelling, are the four signs distinctive of inflammation, but it is not essential these should all exist to have inflammation. In inflamed or hypersensitive dentine we always have pain, and may have redness and heat, although the latter may not be perceptible; but, owing to the dense structure of the dentine, never swelling.

Some have said "We can not have inflammation of the dentine, because the dentine has no circulation." But the dentine is a living tissue, and all living tissues requires constant nourishment, and is constantly giving off waste products.

How is the dentine nourished and what becomes of the waste products? As yet I have been unable to determine. According to Townsend and others, "We know that the largest of the tubuli are far too small to admit the blood corpuscles, but there is no reason why the blood plasms, or some fluid having like properties should not enter the tubuli, supply the structure with the necessary nourishmant, gather up the waste products and pass out, by which a circulation is established in each tubule directly connected with that of the pulp."

If this be true, it is easy to explain why it is that we find the dentine of a tooth, in which the pulp has from any cause become inflamed so fearfully sensitive. If the pulp be treated and restored to its normal condition, the sensibility of the dentine is reduced. As to whether either of the terms, inflammation or hypersensitiveness of the dentine, are scientifically correct, I have my doubts; of the two, I prefer the latter.

The methods of obtunding sensitive dentine may be classed under three heads—Physical processes, Medication and Instrumentation.

As Physical processes we may consider the application of heat aud cold. We all know that oftentimes by the simple drying out of the dentine with warm air its sensibility is greatly reduced. If we use absolute alcohol, then warm air, this is accomplished much more readily and effectually. When we apply heat, we do nothing more than dehydrate the dentine, and just to the extent that we dry up the contents of the tubuli will the normal function of the fibre be reduced. Some have suggested drying out the tubuli in this manner, then filling them with some one of the essential oils, believing that they could in this way prolong the period of insensibility. I believe this wholly unnecessary and dangerous, to the extent that the tooth may be discolored by the deposit, from the coloring matter of the oil used.

The cold producing agents, such as ether spray, chloride of ethyl, and chloride of methyl, act upon the dentine by freezing up the contents of the tubuli, thus obtunding their sensibility. The chloride of methyl is probably the best one of these agents. In the cavity to be treated should be placed a piece of cotton saturated in glycerine, then the spray thrown on the cotton. This will lessen the pain considerably, although all cold producing agents, while effective, are more or less painful.

As Medications: We may use caustics, (potential caustics) nitrate of silver, chloride of zinc, carbolic acid and its combinations, as Robinson's remedy, and Black's 1, 2, 3, solution.

Nitrate of silver when applied to sensitive dentine acts on the contents of the tubuli, destroying its vitality to the extent of the combination which takes place. The objections to its use, which I believe sufficient to exclude it altogether, are the discoloration it causes, and its superficial action, being escharotic rather than caustic.

Chloride of zinc, while painful, is a most valuable obtunding agent. Its painful action may be modified by bathing the sensitive surface, prior to the application of the chloride, with chloroform, tincture of aconite, or atropine solution. It is very penetrating, and in no case should be used where there is danger of irritating the pulp of the tooth.

Carbolic acid being an antiseptic as well as escharotic, makes a very valuable agent as an obtundent. Often exceedinly sensitive dentine can be relieved by simply applying carbolic acid, and drying out with hot air. The action is much more rapid and effective, however, if the drug be combined with either alcohol, chloroform or ether. Robinson's remedy, composed of equal parts of carbolic acid and caustic potash, and Black's 1, 2, 3, are often very effective. All of these caustics act by simply coagulating the contents of the tubuli.

Instrumentation, or the use of thoroughly sharpened instruments, I believe to be the most important of all the methods of obtunding sensitive dentine. Sharp excavators skillfully used, will in many cases be all that is needed; even retaining forms may be made with the excavators in extreme cases. When the bur in the engine is used, it should be sharp, and the engine run slowly, so as to prevent the generation of excessive heat, which will always cause great pain. Under this head also might be considered the matter of gaining the perfect confidence of the patient. This is no doubt of great importance.

DISCUSSION.

Dr. C. B. Blackmarr: In regard to the paper just read by Dr. Van Deman I would like to say that if any dentist with good common sense will sit down and have the contents of the tubuli frozen with the agents mentioned I am sure he will not call it painless dentistry. And I am quite sure that the dentist who uses, as the paper states, Robinson's remedy, chloride of zinc, oil cassia, etc., will wish for something better before he can call the excavating of dentine painless dentistry. To my mind practicallly, the excavating diseased dentine with an obtundent is a very different thing from excavating healthy dentine, and by the way a patient, with a bad bringing up, combined with a streak of ugliness and a bad temper, will usually derive very little or no benefit from local obtundents.

There is one thing I wished to say last night and I will say it now, and that is in regard to the physician giving chloroform, etc. for us. I never allow one to do it in *my* office, but in *his*, and if anything goes wrong or unpleasant happens, or the patient dies, the victim is in the physicians office and *not* in mine. The physician has the whole responsibility.

As I am simply to open the discussion I am going to do so from a practical business standpoint.

Last summer I saw a patient undergoing an operation by a dentist using a so called "painless process." She said it did not hurt. Her friend with her, a patient of one of the best dentists in Detroit, said to her as she sat in the chair "then I am going to ask Dr.—— if he uses anything now, he never did for me before." This Detroit dentist's answer to her a month later was that it was a fraud, a fake, a humbug, that there was nothing one could put into or around a tooth that would make it hurt less when operated upon. Now if this statement is so, I am surprised that this subject should be ever mentioned by Dr. Hoff, at our State meeting, for we are not supposed to discuss fakes.

Dr. Case once told me that it was a fact that so called quacks were the first to "catch onto" new remedies and schemes before the regular practitioners did, and these remedies would generally be called fakes at first. A patient told me this summer that she had cocain applied to her gums in New York city in 1885, to relieve pain from ligatures, etc.

When was it first taught in our dental colleges? Why is it that young dental graduates don't know about some of these things, or all of them before the quacks so called? I think they should be ready to meet them instead of being annoyed and made to cope with them.

It has been said that people who are ill often get well by the aid of medicine. Some get well without any medicine, and others get well in spite of medicine, and so it is in regard to diseased teeth, that some are filled painlessly by the aid of medicine, some without any medicine and others in spite of medicine, and some are cleaned out with a good deal of pain in spite of all we can do at present to avoid it. And some patients are so sensitive in regard to their teeth that scraping on the rubber-dam clamp causes them pain. Obtundents for sensitive dentine are of little use in such cases. However, it is a fact that certain drugs rightly used will obtund sensitive dentine, so much so at least, that the excavating can be done with less pain than without, and patients will often say that it is entirely painless even when before operating the cavity could scarcely be touched without pain.

The right use of any drug is a nice thing. So also is a satisfactory procedure to use one's patients right. This makes me think of the answer a professor in the State Normal School gave a boy who asked him if there was not two ways to spell a certain word. His answer was, "Yes, a right way and a wrong way."

Did any of you ever notice how some dentists adjust the velvet rubber-dam? Is it painless? Did any of you ever have that soft floss silk slipped in between your teeth down on to and into your gum by one of those dentists who does not believe in so called "painless dentistry"? Was it painless? Could it have been made less painful? I think it could. And the rubber dam clamp—did you ever feel one? And yet Dr. Rhein of New York, in the *Dental Cosmos*, says he is sorry for the dentist who cannot adjust one painlessly. Did any of you ever let some brother dentist try to find an exposed pulp with an instrument just big enough to fit into the exposure and make pressure on the nerve? Did you call that painless? Did you ever see a dentist trying to obtund sensitive dentine by drawing in alcohol vapor from a lamp and blowing it into the cavity with a chip blower, producing hot and cold blast alternately, after medicating the cavity with oil cassia, etc., and the dentist wondering why the drug did not work? I have seen a dentist take an excavator to put arsenic into one tooth, the pulp of which he wanted to destroy, and use the same excavator uncleaned to clean out another cavity, and wonder why that tooth pained afterward. Usually in such cases, if they are reported, the name, age, nationality, sex, color of hair, etc., would be given, bet the arsenic would not be mentioned.

"Delicacy of manipulation is what must be acquired by a dentist to be successful," says Dr. Black of Chicago. It includes nearly everything a dentist has to do. Imagine a dentist trying an obtundent—a drug—on sensitive dentine and then cutting the dentine with a dull bur. Do you think he will regard the obtundent successful? Or the patient think differently from him? A friend of mine, a fine operator, a professor in a dental college, often would adjust a rubber dam, put in an obtundent in the cavity of a tooth and leave the patient while he shaved himself in his laboratory, wrote a letter or read a chapter or so, and upon his return wonder why the patient called the whole operation painful. I once saw a professor in a dental college tell a lady to hold perfectly still as he was not going to hurt her at all, and at the same time he took a chisel shaped excavator and exposed two pulps. After her scream, he said, "Why, did it hurt you?" "Mercy, yes," she said. "That's good, I wanted it to, I had to do that way to treat them," the professor replied. Now do you think that woman could be made to believe and feel that that man would do work for her or even look at a tooth without pain to her?

Did any of you ever have an aching sore tooth and be obliged to have your assistant or student, in whom you had little faith, dig or probe into it to see if he could tell for you what made it ache? Did it not seem to you that every move he made went direct into the pulp, when in reality he might have been scraping on the rubber dam clamp simply? But how differently you sat in the chair a few days after, when you had gone to a neighbor dentist, in another city perhaps, one in whom you had perfect confidence that he would do just what was right and be accurate and careful. You all know of the many cases on record of death from fright and you all know the influence of one's mind over the body during any trying ordeal. A clipping will perhaps make my meaning clearer.

IMAGINARY PAIN.—A CURIOUS EXPERIMENT AT THE PERFORMANCE OF A SURGICAL OPERATION.

"The pain experienced in surgical operations is largely in the imagination of the patient," remarked Dr. W. C. Tousley, of Kansas City. "I once had occasion to perform an operation on a man where it became necessary for me to use the knife twice. After the first part of the operation was over the man declared he could not stand any more, as the pain was more than he could bear. Convinced that the suffering was more imaginary than real, I resorted to this ruse: I called in my assistant and told him to tie a bandage over the man's eyes, which I said was saturated with a soothing lotion which would allay the pain. I told my assistant to grasp the man's hands and hold them firmly. Then I told the patient to lie perfectly still, and when I said 'Ready!' to prepare himself ior the ordeal. I then went to work and in a short time finished the operation, the man remaining perfectly quiet all the time. After the operation was completed I called out 'Ready!' at the same time barely touching the wound with the handle of the knife. The man let out such a roar as I never heard before, and declared I was killing him, struggling with might and main to get free. When told that the operation had been finished without his realizing it, he would scarcely believe it."

Mind-curists or Christian Scientists believe pain can be entirely relieved by putting the mind in a certain condition.

It has been said that a dentist should have a tooth filled himself once a week, in order to treat his patients decently—and I think so too. Dentists generally are not so careful as they ought to be. They forget many times that they are working on living tissue. I think "Painless Dentistry" should be called dentistry with less pain than usual. So called "Painless Dentistry" I think has done a good deal towards making dentists in general think more about being careful. A patient noticing that a dentist is trying to relieve any little pain and doing little things accurately, will have confidence in that dentist, that when it does hurt a good deal, he is doing his best to have it hurt as little as possible. Why I believe a dentist should try to have his patients have as much confidence in him in this respect as the S. S. White Co. tries to have us dentists have in the superiority of their burs. But whether a dentist should advertise his work to his patients in the way the S. S. White Co. does its goods to us I suppose would be a question to some dentists.

This subject of "Painless Dentistry" has placed upon the market a large number of obtundents. Our dental depots and agents advising us to use this and that.

Dr. Hoff says he is continually getting letters from students who have graduated and gone to practising and who have encountered quacks here and there who were extracting teeth painlessly and asking no fees, and it hurt the recent graduates' practice, so much that they had nothing to do. Now who is to blame? If a graduate cannot convince people that he can pull teeth better than a quack, then he is to blame. If a quack can pull teeth better and has a right to pull teeth according to the laws of this state, he is not to blame, and the people are not to blame for going to him. But if the dental profession, or we will say this body of dentists, know that the quack does mischief to the people rather than good, there is a way of letting the people know it. There is a way of getting laws so that the young graduate will be rightly appreciated. But is not the way to make the young graduate lie down and keep quiet until such a time comes. For at present he is obliged in a business way to try to get a practice under laws which allow quackish methods. There was a time when the dentists in this state were annoyed by unprepared men practising dentistry. It is not so now. Dentists used to be constantly called upon to give patients "vitalized air," but I have scarcely heard since the time Professor Watling's resolution was before this Association and was copied into the daily press and so educated the people, showing them that "vitalized air" was simply chloroform and mixed with nitrous oxide gas; showing the people that, the patients, were being fooled by the quacks, so called, and the people appreciated it. And so I say about these young men who are so annoyed, that I think they should be allowed to show or be helped to show the people, their patients, that the quack is wrong (and he should be rather than the regular practitioner), and it can be shown clearly and positively to the people, it will not be long before the young graduate will have the practice he deserves. Business principles mixed with professional principles would remedy it all.

Dr. L. E. Custer: One point I would like to speak of—the part imagination plays in dental operations, especially the cutting of sensitive dentine. Imagination is a subjective faculty. We have to deal with a mental activity. The impressions are brought to the mind of the patient through the several senses and the pain felt through these agencies is for the time being most real. The sense of sight, for instance. A grand display of instruments in a dentist's office is all very well in its way. Such instruments enable him to do excellent work and are essential, but they should be kept out of sight of the patient. The sense of smell has its influence too. The odor of iodine, for instance, will bring to the mind of the patient painful memories; the odor of carbolic acid and creosote have a like effect upon the minds of some patients. The sense of hearing is another agency through which imaginary pain is felt. I think that in the case of ladies, particularly, who are accustomed to the quiet of the household, the pain is aggravated by the noisy surroundings in a dentist's office.

Personal magnetism should be exercised as much as possible by the operator. He should treat his patiens as though they were living, sensitive human beings. He should inspire them with confidence in himself and his ability to perform the required operation. He should keep them as quiet as possible and guard against all irritation to the senses of sight, hearing or smell.

Dr. Barber: I think the best results are obtained by running the engine rapidly. Use a smooth-running engine, and a sharp bur, bearing on lightly. One has better control of the bur, and certainly there is less friction and less pain than when more pressure is used.

Dr. Lathrop: I have always thought it best to run the engine rapidly, using a sharp bur and light pressure.

Dr. Field: I heartily endorse what the last gentleman has said. I use a very sharp bur—a dull one I throw away—and run the engine just as fast as I can, just touching the tooth, and lifting the bur from time to time so that if any undue heat be generated, it has time to cool in lowering.

Dr. Moore: I have never been able to satisfy myself that a rapid running machine was better than one run slowly. I think a fairly good sized bur, well sharpened and run rather slowly, with good pressure, will do better work. Rapid running causes more friction and more heat; and it is the heat, I think, that causes the pain.

Dr. Watling: It is I think, a very hard matter to decide which is best to use, a rapid or a slow movement of the engine. I have had a great deal of experience in excavating teeth, perhaps more than anybody else here, and I have never fully decided as to which is better. But I am inclined to agree with Dr. Moore. An excavator well sharpened does the work with less pain than the bur. Why? Because there is no friction, and personally I think I prefer it to the bur.

Dr. Parker: I believe that pain is always the result of pressure upon some nerve. Whichever method produces the least pressure will cause the least pain. Another element is time. The excavator produces less pressure, and hence less pain, because less time is taken.

Dr. Siddell: Much of the pain felt during dental operations is mental rather than physical. If we have a patient who thinks he is going to be hurt, that person invariably will be hurt. If the operation can only be done so quietly and quickly that he does not realize what is being done, there is not apt to be so much pain. The engine makes more noise than the excavator, and that I believe is why more pain is felt when it is used. I am confident that nine-tenths of the pain experienced is imaginary. Of course a great many things do hurt, and hurt badly, but in the majority of cases the pain is mental rather than physical.

HYPNOTISM.*

BY PROFESSOR GEO. H. MEAD, ANN ARBOR, MICH.

Treatment of disease by suggestion goes back even to prehistoric times. The means by which this suggestion was brought about was through the belief in the charms, ceremonials and rites practiced, but the principles were the same as in the most modern methods of hypnotic therapeutics.

Hypnotism can be approached from two sides—the psychical and the physiological. On the psychical we have to describe the state of consciousness of the person hypnotized, on the physiological, the state of the physical organism during the condition.

The positive action of suggestion is perfectly normal. Every suggestion that we receieve either through words spoken to us, or through signs given consciously or unconsciously, or through objects which suggest actions, tends to be carried out, and if we follow out our obscure states of consciousness, we will find these tendencies, even when they are checked almost before we recognize them. Hypnotism consists in removing the checks and counter suggestion by which we direct our actions. So far as we can describe such a condition there must be a great dimness of background and environment, in the midst of which the single suggestion stands out with relative distinctness. The whole pathological condition in the hypnotic state consists in the rendering dim and indistinct of the background and environment or consciousness, by means of which we judge of the value and propriety of actions and in which we find the counter suggestions by which we check or direct any particular suggestion.

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* Digest of paper read before the Michigan State Dental Society, June, 1894.

On the physiological side, we must suppose a change in the co-ordination of the central nervous system, such that one line of central reflex is not connected with the other paths, which would under ordinary circumstances check, or modify or direct its expression. Further than such a general account, we are not as yet able to go in any physiological statement of the phynotic state.

On the therapeutical side we are justified in using hypnotism for all those diseases in which suggestion has worked already in producing pathological conditions and also in such functional diseases as allow of regulation through suggestion, acting by means of the higher nervous centers. But especially is hypnotism allowable in cases where, as in dentistry, there is need of a local obtundent or anesthetic.

DISCUSSION.

DR. PARKER, Grand Rapids, Mich.: I would like to cite a case of hypnotism. The patient was a person of more than ordinary ability, clear sighted, not easily deceived. She had made a study of this subject to some extent. She came to me for an operation. As her teeth were extremely sensitive I determined to hypnotize her. I told her this. I told her I wanted her to go to sleep, not entirely asleep, but just far enough to dream. After two or three minutes I said to her, "Here is a book. I want you to take it and go down to M—. There is a hammock down there and I want you to have a good time." I then began filling the tooth. I worked for about two hours—it was a large gold filling. After finishing my work, I woke her up by snapping my fingers. She awoke with a start. "Oh, doctor, I have had such a nice time. I have been down to M—. I had a hammock there and such a nice book to read." I asked her what the book was about. "I do not recall any particular part of it, but it was very interesting." She was much surprised when I told her what I had been doing, and of course was very grateful.

Hypnotism is certainly a wonderful thing and a power for good, but it is also in the hands of the unscrupulous a power for ill.

Dr. J. L. Sweetnam, Manistee, Mich.: It is a question in my mind whether it is right or not for a person to use the hypnotic power. There is no question whatever about it being possible to put persons into a state of insensibility to pain by this means, but is it right for dentists to use this power? I became quite enthusiastic at one time about this subject and made use of it in my practice successfully. I could extract teeth, and live pulps, without the least pain to the patient. But I found it reacted against me in the minds of my patrons and I thought it would injure my practice, and I stopped it. What I want to find out is what position this practice is likely to take in dentistry. I do not wish to sacrifice my practice, nor do I wish to go on alone.

LOCAL OBTUNDENTS.*

BY A. W. HAIDLE, D.D.S., DETROIT, MICH.

Local obtundents, or to use a more general term, local anesthetics, are employed to temporarily abolish the sensibility of a part, and allow slight incisions or operations to be made painlessly.

Their effect is in some degree due to a paralysis of the end plates of the terminal branches of the cutaneous nerves; and possibly to some extent to a sedative action upon the blood vessels and tissues, analagous to that which is produced by rubbing or scratching, which gives temporary relief in itching.

Local obtundents may be divided into two general groups—

1st. Agents which are applied or administered as drugs, either singly, or in combination with others.

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* Read before the Michigan State Dental Society, June, 1894.

2nd. Agents which are applied to produce thermal changes.

In the first division we find the following: Aconite, atropine, campho-phenique, carbolic acid, chloral, chloroform, cocaine, menthol, morphine, opium, pyrethrum and veratrine.

As thermal agents we may employ—ice, ether spray, rhigoline, chloride of ethyl and chloride of methyl.

The greater number of the remedies mentioned in the first group are rarely used alone, being more frequently employed in combination with other drugs, and we find in our dental literature and text-books, and in the discussions of dental societies, numerous formulæ given, some of which are good, others inefficient, and still others which should be used with great caution.

In order to construct a formula which shall prove efficient in obtunding the sensibility of the oral tissues, it will first be well to examine into the histology and physiology of those tissues, and into their relations with the general nervous and vascular systems. We find that the mucous membrane covering the alveolar process consists of an epithelial covering, lying upon a connective tissue stroma, the tunica propria. The epithelium is of the stratified squamous variety, and is continuous with the epidermis on the one hand and with the covering of the pharynx on the other. It occupies a place, as regards power of absorption, midway between the two, having greater power of absorption than the epidermis, and less power than the mucous membrane of any part of the alimentary canal below the mouth. The tunica propria is composed of interlacing bundles of fibrous connective tissue and possesses numerous simple papillæ which encroach on the epithelial layer, but do not appear on the free surface of the mucous membrane.

The larger blood vessels lie within the submucous tissue and give off branches which extend through the deeper layers of the mucosa to the superficial portions of the connective tissue stratum; on reaching the outer boundary of the latter the arteries break up into rich sub-epithelial capillary networks, and where papillæ are present, enter the minute elevations to supply their apices with terminal capillary loops. The nerve fibres, largely of the medullated variety, accompany the blood-vessels, and end in a sub-epithelial plexus; and special terminations—the end bulbs—are found in the apices of some of the papillæ.

It will readily be seen that for the drug to accomplish its purpose of destroying sensibility, it must pass through the several layers of cells which make up the epithelium, and which range from the irregularly shaped columnar and polyhedral cells, to the large, flat and scaly type so characteristic of the outer layers of stratified squamous epithelium, and must therefore possess in a marked degree either the power of penetration or the property of being easily absorbed.

By comparison with the mucous membrane lining the lower portions of the alimentary canal, it is found that while the mucous membrane of the stomach and of the intestines is especially adapted to the function of absorption as well as of accretion, that of the mouth is distinctively a secreting and not an absorbing tissue.

When, therefore, the power of penetration or the property of being easily absorbed are not inherent in the drug which is to form the *basis* of the formula, it becomes necessary to add a drug which will *aid absorption.*

Absorption can be aided in two ways—first, by increasing the circulation at the point of application, which can be accomplished by gently rubbing the part, or by the application of irritant substances; and second, by the use of an agent possessing endosmotic power. Such agents we have in chloroform and ether. Water, oils and resins do not have this property.

It is thought by some that alcohol possesses powers of endosmosis, but Waller has proved by experiments on the skin that this is not true. While it is as great a solvent of the sebaceous matter found in the skin as chloroform, it is not absorbed as quickly as this agent. Experiments on this point were made with iodide of potassium, which is a drug very readily detected in the urine. Waller therefore concludes that absorption is aided more by the endosmotic than by the solvent power of a drug.

If the basis of a formula is not sufficiently powerful in its action, an *adjuvant* should be added; a drug which will intensify or enhance the action of the basis. Such a drug we again find in the volatile liquids mentioned above, which are also aids to absorption. Heated applications act more energetically by increasing the circulation in the part.

It may be necessary to add a *corrective* to the formula. The basis may be too irritant or caustic and its harmful effects must be corrected. These effects may be either local or general, and the corrective used depends entirely upon the nature and action of the drug to be corrected. Only a few years ago chloral was extensively used as a local anesthetic, and its irritant and caustic effects were demonstrated by the many cases of inflammation and sloughing of the part which resulted.

The local and the general effects of chloral are antagonized by carbolic acid, by atropine and by several others of the alkaloids. The nature of the action of these antagonistic drugs seems to be somewhat obscure. In commenting upon it, Brunton says; "Some regard the effect of one drug in counteracting another as a case of chemical combination or substitution, the second drug either becoming added on to a compound of the first with some of the tissues or else displacing it from such a compound with the tissues. Others, again, think that no chemical action of this sort takes place, but that each drug acts upon the tissue by itself, one, for example, exciting and the other paralyzing."

Again, it may be necessary to add to the formula a *limiting agent*, a drug which will limit the endosmotic power of the basis. This may be accomplished in two ways—first, by the action of coagulants on the albumen of the protoplasm of the tissue cells; and second, by coagulative action on the blood capillaries and on the albumen of the serum contained in the tissues. Coagulation of the albumen of cell protoplasm may be produced by the use of such agents as carbolic acid, tannic acid, lead acetate, mercuric chloride, silver nitrate, copper sulphate, zinc chloride, etc., all of which combine with the albumen to form albuminates. Coagulation of the albumen of the serum in the tissues, and of the blood capillaries, may be produced by the use of astringents, including among those already mentioned as coagulants, others of the mineral and vegetable acids, alcohol, alum, and still other salts of the heavier metals.

In nearly all cases it will be necessary to employ a *diluent*, and the agent employed for this purpose should also be a *solvent*. The nature of the diluent must depend largely upon the nature of the basis, the diluents commonly used being chloroform, ether, alcohol, distilled water and glycerine.

Finally, it must be observed that the mixture is *antiseptic*, and that the agents employed are *compatible* with each other to such a degree at least as not to prevent the accomplishment of the desired result. The mixture should be reasonably *stable*.

It will not be necessary to add to the formula a drug for each effect, for an agent may be employed to accomplish several results. As an example of such an agent chloroform may be mentioned; this may be employed as an adjuvant, an aid to absorption, a diluent, and it is also a solvent of almost unlimited power and scope. A good formula is given in Gorgas' *Dental Medicine*, which is as follows:

℞ Tinctura aconiti, f. ℥ j.
Menthol, gr. x.
Chloroformi, f. ʒ j.

M. S. Apply freely to gum about tooth for several minutes.

Aconite forms the basis and is a powerful nerve sedative. Its action when applied locally is to irritate the sensory nerve endings, causing a peculiar numbness and tingling, and afterwards paralysis. Menthol is employed as an adjuvant, has marked anesthetic action and is also antiseptic. The chloroform is the diluent and is an aid to absorption as well.

Another, and an excellent formula from the same source, is as follows:

℞ Chloroformi purificati.
Tincturæ aconiti.
Alcoholis, *aa.* f. ℥ j.
Morphinæ sulphat, gr. vj.

M. S. Apply for one or two minutes, to gum over root of tooth to be extracted.

A formula constructed by Dr. Von Bonhorst, contains—

℞ Chloroformi.
Ætheris sulph.
Spiriti lavandulæ.
Pyrethri (fl. ext.) *aa.* f. ℥ j.

M. S. Apply for one or two minutes, to gum over root of tooth to be extracted.

Among the drugs employed without combination with other drugs, cocaine is the most important. An alkaloid occurring in colorless, transparent prisms, its salts are readily soluble in chloroform, ether, alcohol and water, and are rapidly absorbed. The dose is, gr. ss. to gr. j. For epidermic application a solution in chloroform may be used, varying in strength from a 6 per cent. to 20 per cent. solution. Dr. Hewitt, of Chicago, recommends the following formula for all operations about the gums:

℞	Cocaine,	gr. cxx.
	Atropine,	gr. $\frac{1}{10}$.
	Strophanthin,	gr. $\frac{1}{5}$.
	Naphthol hydrate,	gr. x.
	Oil of cloves.	
	Oil of cassia.	
	Chloroform, *aa.*	ʒ ij.
	Glycerine,	ʒ j.

The basis of this formula is cocaine, which used in this amount and proportion makes a 22 per cent. solution, very strong for epidermic application. It should be used with caution, and never be injected into the gums. This formula is deficient in correctives. Strophanthin is a very unstable and unreliable heart stimulant, and the quantity of atropine is too small. Carbolic acid would be more efficient as a corrective than naphthol.

Among the thermal agents mentioned, ice is never used as an anesthetic, but is frequently employed to reduce inflammation, having a pronounced sedative effect. The ether spray is rarely employed, not being so effective as others of the thermal agents mentioned.

Rhigolene, one of the lighter products of petroleum distillation is also rarely used, because of its odor and the inconvenience of its application. It is a colorless liquid, of a disagreeable odor, quite volatile and inflammable, and produces an effect similar to the other volatile, freezing agents.

Chloride of ethyl is probably the most convenient and popular of the thermal agents of the present day. It is a clear colorless liquid, possessing an agreeable ethereal odor, and boils at 50° F. It is manufactured in France, and is not found in the U. S. P. It is produced by the action of chlorine on ethyl alcohol, and is found in commerce in glass flasks which contain about three drachms. The method of application is to break the point of the flask, and after having protected the surrounding tissues, to direct the spray to the part to be anesthetized. It evaporates very readily and causes intense cold, completely freezing the part, and rendering all slight operations painless. The best effect is produced when the flask is held at a distance of ten or twelve inches from the part, thus allowing the liquid to become vaporized before reaching the tissues. The patient should be instructed to breath through the nose, and care should be taken that the application is not too prolonged, for if the part is too much deprived of blood, death and subsequent sloughing of the tissue, results. The anesthetic stage is indicated by a whitening of the tissues and by the formation of ice crystals on the free margin of the gum.

Chloride of methyl, though not so extensively used, because of its greater comparative cost and the clumsiness of the apparatus in which it is contained, is a gas at 70° F. with a slight ethereal odor. It can be liquified by pressure, and in commerce we find it in the liquid state held in copper flasks which contain about one quart.

As the chloride of ethyl, it is manufactured in France and is not found in the U. S. P. It is made from the remnants of beets used in the manufacture of beet sugar; extracting from these remnants the chlorate of tri methylamine, which, upon the addition of heat, produces chloride of methyl. Its action differs from the action of the chloride of ethyl only in intensity, the former producing more cold and in less time than the latter.

SYPHILIS.*

AN AUTOBIOGRAPHICAL SKETCH.

BY W. H. WHITSLAR, M.D., D.D.S., CLEVELAND, O.

After being called the disease of the French, German, Poles, Turks, Spaniards, Neapolitans, and others, in which each nation tried to have another stand as sponsor for me, I received my name in the sunny clime of Italy. I was already hundreds of years old and my friends were scattered all over the world. Previous to this my guardians had failed to give me a name, although I am the daughter of Prostitution.

I was named after a herdsman of King Alkithous, Syphilis by name, who, having offended Apollo, the god vested his vengeance by giving me to him, at least, Fracastor, in a Latin poem in 1530 A. D., gave this history to the world.

The word syphilis descends in a direct line from the Greek, "with," and "love," the companion of love, meaning that the disease is transmitted by intimate relations.

The history of my career has been one of contention. I have lived in all parts of the world and visited all nations.

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* Read before the Northern Ohio Dental Society, June, 1894.

From the fact that I have appeared in different forms of disguises, I have been unrecognized by many, until I threw off the mantle, and the flaming signs of my virulence became cognizable. Even now the dress I wear may have different colors. I am partial to a red or copper color, and these fringed with blue or gray dominate my dress.

These colors may be evidences of my presence and liability to remain for a time, for I have a peculiar habit which in man is a virtue, in me a curse, namely, perseverence. I form intimate acquaintances and never leave them, although at times our lines are separated somewhat, because, my light is kept under a bushel. By men I am introduced to their beautiful wives, and even become a part and parcel of their children. I am truly sorryful to kill these poor little innocents, very often before they are born or soon after, but it is only the logical sequence of that persevering habit of adhering to those who seek my company, and fulfilling the old adage that the sins of the fathers shall be visited upon their children.

Misery loves company. My life has been one full of misery. I have seen thousands of people die and nations cursed in my presence, whilst I have survived. Though I have been said to be five thousand years old, I at times have tender feelings and need nursing. I have myriads of nurses. As a rule they are unfit to give me comfort, because they try to get rid of me. Perhaps this is because I am repulsive to many. My life is repugnant to me also, although I live in freedom in king's palaces, and have seared the names of dignitaries of church and monastery, monks, nuns, etc., as well as to degrade the poor slave. My home is constantly being moved from one place to another. My personality is an enigma. Some authorities claim that I am a poison existing in the blood which I infect. Others devise that I am an individual germ capable of propagating my own species. This is not definitely settled. However, Lustgarten in 1884 described an S shaped bacillus found in tissue and discharges of syphilitic ulcers, but he was unable to cultivate it. It has been found in the blood by other observers. That I do poison men, I cannot deny. That I can race with unmeasured speed in flowing currents of blood and secretions is my delight. As yet no man has captured and pinned me to the walls of his dark museums. In these catacombs traces of my wrath may be seen. It is a fact, which may be recalled, that in the Stone age my existence then is now proven by the marks of exostoses that I left upon the bones of man. Teeth also bear characteristic deformities. Broca, Ollier, Parrot and Virchow, have witnessed these results.

I am therefore prehistoric. Men have even suspected that I have existed since man was created.

Undisputed evidences chronicle my presence in China, 2,637 years B.C., by the writings of an emperor Hoan-Ti who lived at that time. My cradle seems to have been rocked in India. The Aryans, a Sanscrit speaking people of India, whose ancestors came from Central Asia, peopled Persia, Palestine, Arabia, and Egypt, caused my virus finally to spread over Europe. I have visited the islands of the sea and also appeared in America before it was discovered by Columbus. Evidences of Peruvian subjects of this disease before Europeans made use of iron are well known.

Further history of my existence would require pages of print to complete it.

I will now mention two of my most prominent characteristics.

Most flowers have perfumes. Some are noted for their delicate odors, others are not so pleasant. Unfortunate I am like the flowers with the disagreeable odor. It is said that once the smell from my breath penetrates the Schneiderian membrane of man it leaves a lasting remembrance.

Secondly. I have a monstrous appetite. It amounts to gluttony. I feed upon the vitals of men and women alike. Their blood I render thin, the red corpuscles are dismembered and their coloring matter assist in the syphilides. I feed upon brains, oh, what a delicate dish! Many noted men have contributed theirs to appease my appetite. My greed is well described by E. L. Keyes, in the following language: "There is no organ or tissue of the body through which it may not manifest its presence by symptoms, or upon which it may not exercise its power. The lymphatic glands all over the body may suffer, some habitually more than others. The skin from crown to sole, the nails, the hair, (the teeth in inherited disease), and the mucous membranes, especially through the natural orifices, have their peculiar affections due to syphilis. The eye and the testicle do not escape, and each and every viscus is liable to be invaded as are all the tissues, connective, fibrous, muscular, cartilage, bone, brain, nerve, and vessel. Not only this but the all embracing arms of general syphilis include the functions as well, any of which may be disordered by it, and each and all of the special senses may be perverted or destroyed, including the sexual appetite. The symptoms of all the forms of local, special, or general paralysis of motion or sensation may be occasioned by syphilis. Finally, the intellect may succumb. Acute and chronic mania, dementia, lunacy, idiocy, all the above and many more form the category of symptoms comprehended under the one term Syphilis."

It is my first essay to destroy the shameful parts, and indeed this is the first salutation to my master, who bought me with a price, and now he becomes *my* slave.

Inherited syphilis has no chancre. Chancre is a term given to a syphilitic primary sore. Although a misnomer, the name is retained by syphilographers; to distinguish it from chancre, chancroid, a similar sore having a soft base, whilst the chancre has an indurated base. There are other characteristic differences and the principal one is the edge of the sore, chancre, edge sloping, chancroid undermined.

Chancre has a period of incubation of ten days to two weeks. Chancroid has no incubation. The secretion of the chancroid is purulent, and autoinoculable. Lindnan has inoculated himself 2700 times at last report with chancroidal secretion. Chancre may have no secretion, or if so, it is serous and scanty. The chancre (syphilitic) is not transferable to animals as is chancroid, and appears but once in a life time. Zeigol says he has seen reinfection.

Chancre is followed by a train of constitutional ebulitions. Ricord states that an individual is never free from syphilis if it is acquired. Chancroid is not accompanied by any constitutional syphilitic infection.

The appearance of chancres on extra-genital parts is limited to a small percentage. That they are contagious is evidenced by many facts. Prof. Tarnowski of St. Petersburg, relates a case of a woman who came under his observation who contaminated 300 men in ten months by primary transmission. Think of the consequences! Yet, the disease is rarely fatal except in the visceral form. "Gonorrhœa," says Keyes, speaking of its consequences, "sends more to the grave than syphilis."

Syphilis may be divided into three stages, i. e.

Primary.—The chancre, lasting from four to six weeks, found principally on the genitals, it may be found on the lips, in the mouth, on the tonsils, or in the pharynx. Dentists should be careful not to inoculate their fingers by wounds from an instrument laden with the poison from a syphilitic sore, or, they may do the same by holding an instrument with the lips, fissures in which would permit the poison to penetrate to the deeper tissues. In dental operations the chief source of danger is in the mucous patch. This secretes the intensely contagious substance which may adhere to the instruments, napkins, rubber dam, dental floss, plaster, etc. The disease may be transmitted by tooth transplantation.

The *Secondary* stage may last from two months to a year. It is contra-distinguished from the third stage, by its symmetrical effects. The first and second stages affect the cutaneous parts of the body. The third stage involves the connective tissues.

The cutaneous eruptions are called syphilides, (sif-il-eeds), and the following may occur: erythema, papules, vesicles, pustules, bullæ, and gummata and tubercles.

Now, you may ask me "What are some of the manifestations In the mouth of man?"

Naturally our attention reverts to the teeth. Inherited disease vitiating the blood of the mother during pregnancy, causes a lack of nutrition and proper calcification of, principally the central incisors and molars of the permanent set of teeth. The incisors are most affected, because of their smaller lobes, these being deficient, especially the central lobe, the mesial and distal ones are melted down, as it were, to conform to the central one, and consequently the mesial and distal angles are rounded, giving the rounded or "peg shaped" tooth as described by Mr. Jonathan Hutchinson. The central lobe easily disintegrated, favors the "notched" appearance. A study of the time of development of these *truly* will enable one to readily understand why these teeth are affected more than others. Syphilis affects only the permanent set of teeth, as above indicated. Oakly Coles reports peg-shaped teeth in a temporary set. The general debility may reduce the quality of structure in the temporary set. The same expressions of debility will dwarf the alveolar process. Syphilis affects the jaw bones as well as other bones. It must be understood that acquired syphilis may result from syphilitic mothers or nurses, and the full gamut of the disease may be run in the young child. In this event the arrest of development of the jaws may continue so as to have a relative disproportion in the size of the bones compared to the teeth. "Arrest of development of the jaws, however, the result of constitutional diseases, to produce dental deformities, must occur prior to the sixth year." —*Talbot.*

The diagnosis of congenital syphilis is not entirely dependent upon the teeth, for some syphilitics have good teeth.

Tertiary syphilis may manifest itself as—

1. Gummatous tumor—nodular diffuse.
2. Periostitis.
3. Ulcers, (mostly deep, result in caries and necrosis).

When the third form is found it is usually in the median line either at junction of soft and hard palate or over hard palate itself. It may also be found just behind the upper incisor teeth. Mucous patches of the mouth, in either second or third stages are quite characteristic. They consist of bluish white elevations of mucous membrane, their favorite location is on the tonsils and soft palate. These should not be confounded with tubercular ulceration. The dentist must beware of mucous patches. Their secretion is syphitic poison. Unless these or other ulcerations of the mouth are present, saliva or other physiological secretions cannot produce syphilis by inoculation. Profeta of Palermo and Diday inoculated saliva without success. Secretions from chancre, mucous patches, and secondary cutaneous or mucous lesion yielding a discharge, and of syphilitic blood taken from patient with eruption, will yield an indurated chancre. Syphilis is sure to follow, even though the chancre be excised a short time after its presence is known, because the virus is readily absorbed. I would conclude this sketch with the language of Lennox Brown,

"The history of the case, the post-cervicle glandular enlargement, absence of sympathetic induration of the parotid, submaxillary or anterior cervicle glands, the comparative freedom from pain, and above all, its amenity to appropriate remedies will distinguish this disease from cancer, the only malady with which it is confounded."

ALL SORTS.

Sponge Holder for Engine.—Mr. Walter Campbell, of Dundee, has just introduced a novel little holder for carrying a small piece of sponge for moistening corundum and other discs and points. It fits on to the handpiece of the dental engine, and is provided with a spring which can be readily depressed sufficiently to bring the sponge in contact with any disc or point that may be in use at the moment—*Ash's Quarterly.*

Morrison (J. W.) on Dental Fees.—Consultation and examination fees should be a rule, and if those practitioners who are so overrun with patients that they have no time to attend association meetings—and if they do put in an appearance it is to beg to be excused on account of patients awaiting their services—should never deviate from this rule, they would get pay for their valuable time, and the immunity from "shoppers" would afford them a leisure that might be given to association work, either state or local.—*Extract Headlight.*

Genese (D.) on an Effective Obtundent.—At the First District Dental Society of New York Dr. Genese treated and excavated a lower first molar, capping and filling at the same time. The cavity was large and the tooth hypersensitive. Dr. Genese demonstrated the effect in this case of his preparation of carbolate of cocain, the formula of which is:

℞ Cocain, 4 per cent.;
Carb. acid, 50 per cent.;
Benzoin, gum, 50 per cent.;

by the aid of which he excavated the tooth painlessly.—*Extract Cosmos.*

A New Use for Eau de Cologne.—Dr. Roux recently addressed the Medical Society of Lyons in favor of the use of eau de Cologne as a remedy in incipient coughs and colds. A number of his patients have been able to stop colds in twenty-four hours by inhaling eau de Cologne from a pocket handkerchief through the mouth or nostrils, according as the parts affected are the chest or head. A disagreeable burning sensation is experienced at first, but this soon passes away. Dr. Roux is puzzled to know which of the many ingredients of eau de Cologne produces the effect. He is pursuing his researches and hopes to be able to give a plausible solution before long. He is certain that alcohol alone will not produce the result.

Evans (Geo.) on a Simple Method of Forming All-Gold Bicuspid or Molar Dummies for Bridge-Work.—A seamless gold crown of suitable size is first trimmed at the neck to the desired form; fluxed prepared solder filings are placed on the inside of the gold cap and melted, in considerable quantity. A piece of thin platinum, or gold plate, is then fitted over the orifice of the neck of the cap or crown, clamped thereto, and heated to a point sufficient to melt the solder in the interior of the cap, and enable it to flow down and unite the metal at the neck and flow over its surface. A hollow, hermetically tight gold dummy is thus formed, which can be used the same as a solid one, but is much lighter and less expensive.—*Extract Cosmos.*

Sejournet (Dr.) on The Influence of Dentition on the Health of Infants.—The doctor has attempted to elucidate this question through a series of observations, and states in the *Revue des Maladies de l'enfance* that among 734 patients of his own, 72 of whom presented deviations from health at the time of dentition, he found but seven cases in which the ailments were attributable directly and exclusively to teething. Local complications of dentition are very rare. M. Sejournet records only one case in which gingivitis with ecchymosis developed in the course of scarlet fever. The widespread notion of the dire influence of dentition on the general health is extremely exaggerated; still, it is erroneous to deny that influence in all cases, as done by certain physicians.

Baldwin (H.) on a Root Filling Material.—For reasonably safe roots I prefer as a root-filling a stiff solution in chloroform of gutta-percha and hydronapthol, plus a sufficiency of cotton-wool fibre to carry it into place, aad gutta-percha points where the canals are large. This is easy, penetrating, antiseptic, non-irritating, permanent, solid, and can always be removed with a blunt-pointed nerve-canal drill. For canals which are not considered very safe ones, or which cannot be followed far, owing to curvature of the roots, I recommend a root-filling of a mixture hydronapthol, eucalyptus oil, and French chalk on a wisp of cotton wool. This mixture sets into a crystalline mass, but, at the temperature of the body, is not too stiff to prevent its being drawn clear away from the canal at will. It is highly antiseptic, and quite unirritating. In a bottle it becomes hard, and has to be melted by heat before it can be used, but when melted remains fluid for a convenient length of time.—*Extract Record.*

Bacquoy (M.) on Cupric Gingivitis.—In cases of lead poisoning, the coloration of gingival mucous membrane is the result of a direct incrustation, the lead penetrating from without inward, passing from the epithelium to the derma, the lymphatics and the vessels; the margin of the gum is not accompanied by any inflammation. With persons handling copper the metallic particles are deposited in the same fashion, but the deposit forms especially on the surface of the teeth, principally on those which are out of order; these become more of the color of verdigris in proportion as the patient takes less care of his mouth. On a level with the neck of the teeth the incrustation increases; the incisors and canines, which are more exposed, and, thefore, more in contact with the air loaded with the copper dust alone generally present the appearance indicated.

Beyond this localization on the teeth, the cupric border is still more to be distinguished from the lead border in that it is accompanied by inflammation and puffing of the gingival edge; hypertrophic gingivitis, arising from irritation caused by particles of copper being mixed with tartar.—*Revue Internationale d'Odontologie.*

Watkins (S. C. G.) on A Method of Taking Impressions for Partial Cases.—He demonstrated this method by, at first, taking an impression in wax. Then, where the teeth were, it was cut away to make more room. A small quantity of wax was then heated until very soft, and a rope made of it, and left in hot water, so that it might remain perfectly soft until the plaster was mixed, and placed in the wax impression. Then, holding the little rope of wax around the straggling teeth with his fingers, he placed the plaster in the mouth and pressed it home firmly, holding it there until it was thoroughly hard; then he removed it from the mouth without tearing or breaking it to pieces. The wax which was moulded around the teeth gave sufficiently to allow of its easy removal. The wax which had been pressed around the necks of the teeth had moved slightly out of place in drawing the impression. This was pressed back into place, and a perfect plaster impression of the roof of the mouth was obtained. The wax impression had carried the plaster into every part of the vault, thus leaving a perfect impression, without the strain upon the straggling teeth which occurs in the removal of all-plaster impressions.—*Extract Cosmos.*

Bennet (S.) on Dentigerous Cyst.—The case cited was that of a man 25 years of age, who came to the Dental Hospital about three weeks ago with a swelling over the right upper central incisor. On first seeing it he thought the tooth was dead, and directed that it should be drilled to clear out the pulp; but when the house surgeon found the pulp was alive, the swelling was diagnosed as a cyst, arising not from a dead tooth, but from some other cause. The cyst was opened and was found to contain an unerupted tooth. It had at one time been inflamed and pus was evacuated when the cyst was opened. The man had no lateral in the alveolar arch: he had a canine and central incisor, and there was a smallish gap between the central and the canine. He stated that some few months back he had a small tooth with a short root extracted from that particular place with the idea that he would get rid of the swelling and pain, but no relief was produced. He then came to the hospital. An opening was made above the central, and a cavity containing a partly-formed tooth was seen. A considerable amount of fluid escaped. The tooth which he took to be the missing lateral, was inverted, the crown pointed upwards and towards the left. It was somewhat loose, not very firmly attached to the bone, and the amount of root developed was very slight.—*Extract. Brit. Jour.*

Dental Schools.—The committee at Tenn. Dental Society appointed to report on President's address, made the following truthful remarks regarding dental schools:

Too much stress, it is thought by your committee, cannot be put on the importance of using intelligent judgment, both in the demand upon our schools and the selection of proper ones to attend. Your committee would fully agree with the President in urging upon parents and other preceptors the importance of looking into the standing of the schools as to their intrinsic make-up, and as to their relation to the highest professional tribunals. But, in addition, your committee, as a man, urge upon the youth the necessity of preparation from a literary standpoint, before actually entering upon the study of dentistry. It is not claimed that a youth may not make a dentist without a literary qualification, or that it has not been done in the past, but your committee would respectfully claim that the youth would rise easier, and possibly to a higher point professionally, with literary training that he would or could without it. A course of schooling does nothing if it does not teach a youth mental skill in using himself to learn anything before him, and your committee would claim that he can use intellectual muscle upon the problems of dentistry as well as upon lawsuits and sermons.

All of which is respectfully submitted.—*Extract Headlight.*

Mosely (Edw.) on Moulding Gum Contours in Wax.—In those mouths where, owing to absorption of the alveolus, the artificial teeth need artificial gum, it is a matter of some little difficulty to carve this gum so that it shall look lifelike in the mouth.

(1) Take an impression in camposition of a perfect natural denture, carrying the composition well up all around the mouth into the sulcus between cheeks, lip and gum. This model should be stearined and used for making matrices, and is afterwards called the "pattern."

(2) Assuming a case in which the gum underlying the four upper incisors requires reproducing: take a roll of soft composition, and having

wetted the pattern to prevent adhesion, spread the composition over the faces of the incisors and *their roots;* remove and harden in cold water.

The beauty of shape is destroyed in the process of finishing, unless this be obviated by vulcanizing against tin foil. It is therefore preferable to burnish a thick piece of tin foil, No. 60, into the matrix before pouring in the melted wax. The foil-covered contour is now adjusted in place as before, and the corners of the foil should be turned up slightly to hold the foil securely in the plaster when flasked.

Gum moulded like this and packed with the new shaded rubber, and vulcanized against tin foil, is not far inferior to continuous gum work in naturalness of appearance.—*Extract Jour. Brit. Dental Asso.*

Simonton (W. S.) on Combining Rubber Filings with Fresh Rubber.—To many it may be difficult to imagine that filings and scrapings from finishing plates can be of any value, yet they can be made very useful. After the rough and dirty portions of the plates are scraped or filed off, save the balance, and in packing a thick heavy plate, first dip the rubber in warm water to soften, then roll it in the filings, and pack as usual; vulcanize carefully, and I will insure a good plate, well vulcanized, strong and tough and not porous. Rubber treated thus before packing vulcanizes in less time.

In heavy plates it is well, of course, to vulcanize carefully; but with ordinary care the plate will not become porous. I use this method in all plates, even where required to be made thin, as it vulcanizes five or ten minutes quicker, and I think produces better results. Formerly, in some very thick portions of plates, especially those that require much building upon the sides, it seemed almost impossible to prevent the thick heavy portions from becoming porous; all brands of rubber are alike in this respect, but since using this method I have not had one bad result or one porous plate. Porous plates have always been a source of trouble and much extra work. But this method of rolling each piece of rubber in the filings from finishing plates, I think, will be found to always prevent any trouble from this source. Try it, and if you have no filings saved and have a heavy plate to make, from an old plate make sufficient to pack the one on hand.—*International.*

Kerr (J. G.) on Dentistry in China.—In the department of dentistry the Chinese have, strange to relate, anticipated by centuries the profession in Europe and America in the insertion of artificial teeth. Utilizing the femur of an ox, and sawing a circle of half or three-quarters of an inch from the shaft, a section of this circle is used sufficient to fill the vacant space in the mouth. The section of bone is then dressed with a file, so as to imitate the teeth to be replaced, and through holes drilled in each end, copper wires are passed to fasten it to the adjoining teeth. These artificial teeth are designed more for good looks than for purposes of mastication, and since the cost of inserting three or four teeth amounts to about twenty-five or thirty cents, this means of remedying uncomely defects within the reach of all.

American and English dentists of high standing have practiced their profession in Hong Kong, Shanghai, and other cities open to foreign commerce, and have employed Chinese young men to assist in the mechanical part of the work. With the talent for imitation for which the race is noted, these young men have not been slow to avail themselves of the opportunity of learning the more delicate parts of the work performed by the dentist himself. A number of these young men have become successful practitioners among their own countrymen, and with foreign instruments and material, are superseding the crude and unsatisfactory work of the native artists. They have not yet attained to the skill in the treatment of diseases of the mouth which requires scientific knowledge, but that will come in time.

The theory that toothache depends on the presence of worms in decayed teeth is universally believed, and is demonstrated by a process peculiarly Chinese, and which was investigated some years ago by Dr. Rogers, a dentist of Hong Kong, and myself. The native operator holds back the lips with a wooden spatula while he works around the offending tooth with a pointed instrument until there is a flow of saliva and blood; adroitly turning the spatula and placing the other end in the mouth, a piece of delicate paper attached to one side is moistened by saliva and the worms, confined under it, are liberated, and become mixed up in bloody saliva. With a pair of forceps the operator picks them out and satisfies the patient.—*Dental Register.*

Press Back the Festoons.—Whenever gutta-percha is temporarily placed between the teeth for any purpose in the management of proximate cavities, there is one important item in its manipulation that should never be overlooked. As commonly used it is merely pressed down into the cavity with little attention to the form that is given it. The temporary purposes for which gutta-percha is ordinarily employed are the following; To seal medicaments in the cavity during treatment, to maintain space between the teeth until the soreness passes away after wedging, and to press back the gum which may have grown into the gingival portion of the cavity. All these are laudable objects but much harm may be done to the gum septum by the careless use of gutta-percha in this manner. The point to which we wish especially to call attention is this: When gutta-percha is placed between the teeth for these purposes it should invariably be made to extend broadly over the gum septum buccally and lingually, with the object of pressing back the festoon to a level at least, with the portion lying immediately between the teeth.

There are two important things to be gained by this procedure. First the festoon is held out of the way so as not to interfere with the operation of filling. If the festoon be allowed to extend to its normal position while the proximate gum septum is pressed back it will result in the festoon standing up more prominently than the septum and this prevents the easy adjustment of the rubber dam. It also interferes with the use of strips, files, discs or other appliances in finishing the filling. The festoon is often seriously lacerated in the attempt to trim down a filling, and this can all be avoided by pressing the festoon out of the way.

The second point to be gained is even more important. The normal form of the gum septum is that of an arch with its highest point midway between the teeth. This prevents the lodgment of food in the interproximate space on account of the sloping away in both directions of the gum tissue. If this arch is inverted by pressing gutta-percha into the interproximate space to the gingival outline of the cavity it results in a pocket between the teeth into which food will wedge immediately after the filling is inserted. The festoons standing so prominent tend to hold the food between the teeth, and this prevents to a serious extent the return of the gum septum to its normal position. If the festoons are pressed well back on the necks of the teeth, food will not readily wedge into the interproximate space, and the gum will creep up to its normal form and position in an astonishingly short time.

We commend this matter to the consideration of those who have not tried it. They will find that the operation will be much facilitated, and the gum septum left much healthier.—*Ed. Review.*

Bryant (E. A.) on a Method of Repairing a Facing broken from a Bridge or Crown.—Select the facing to be attached, color, size, and shape to suit, grind or clip off the pins extending out from the space from which the original facing was broken from the bridge, and smooth this space so as to present a flat surface. Drill two holes through the backing of the bridge for the reception of the pins of the new facing to be attached, and as near the size of the pins as possible. With the countersink bur in the right-angle hand-piece, countersink from the inside until the bur comes through to the front, but not far enough to enlarge the holes. Now try on and fit the facing, grinding the backing or the tooth to accomplish this result. When fitted to suit, cut the threads on the pins of the facing to be used, first with the larger size die, then with the smaller, the latter being the perfect thread and corresponding to the nuts. In cutting this thread, care should be taken not to force it too fast, and a little oil should be used, otherwise you will twist off the pins in the die, and it is difficult to remove them, besides losing the use of the facing.

Now select two nuts, and try them to see that they will go to place on the pins of the facing before putting the facing in place, laying the nuts selected in such position that you will be able to place them upon the same pin which you tried them on. Place the facing in position, holding same close and tight with the thumb of the left hand, pick up one of the nuts by inserting one of the legs of the screw-driver into the opening, carrying the nut to the pin in this manner, and starting it upon the thread, then change to the cut in the nut for the reception of the screw-driver, and screw to place, not using any force to do so, doing likewise with the other nut. When the two are in place, if they are not quite down, hold the face firmly with the thumb of the left hand, then screw up first one nut, then the other, till entirely home. If you undertake to screw up one entirely at first, and there happens to be the least tipping upon the other side, when you screw the other side down tight it will break the facing. Therefore you must understand it is essential to screw each down equally. Do not use undue force with the screw-driver after the tooth is home, with the idea of making it extra tight, for you are liable to pull the pins out of the facing. The strength of the threads being stronger than that of the porcelain, the latter will give first.

When the nuts are down tight, grind off the extending parts with the corundum wheel and smooth up with cuttle-fish or sand-paper disks. This whole operation consumes about fifteen to twenty minutes' time. With these instruments you are enabled to arrange new facings where the gum happens to have receded away, or where they encroach upon the gum. By baking a little gum upon the facings to be used, you can fill any irregularities at the junction of the gum and facing, thus doing away with the open spaces usually seen in bridges consisting of the six anterior teeth. In fact, these instruments are indispensable to any dentist who does bridge-work or ever contemplates doing it. They can be used to great advantage in many other operations in dentistry, covering more ground than any other set of instruments devised for the use of the profession.—*Extract Cosmos.*

Sanger (R. M.) on An Obstinate Case of Tooth-Discoloration.—It is my purpose to present one of my mistakes, in the hope that it may prove a warning, and prevent others from falling into the same error. A lady presented herself at my office with two badly discolored central incisors, giving a history of devitalization, treatment, and root-filling with gutta-percha, which, upon investigation, proved to be correct. The crowns were beautifully filled with gold, one having a large contour filling, and the entire work giving evidence of superior skill, the only defect being in the color of the teeth, which had gradually grown darker and darker until she was constrained to seek the advice of a dentist, having about concluded in her own mind that it wauld be best to have both teeth cut off and crowned. It seemed a pity to do this under the circumstances, and I decided to attempt bleaching. Having removed the fillings from the pulp chamber and about one-half of the canals, I was gratified to find that the contour filling did not seem to protrude into the pulp-chamber, and I decided not to disturb it; but herein lay my error, as the result proved. As I had recently read Dr. Kirk's paper on sodium peroxid, I decided to employ that agent, and, procuriug some of the powder from Philadelphia, I followed the writer's instructions closely, and one of the teeth improved rapidly, but the one with the gold filling did not, and, in order to hurry it, I changed the treatment, using chlorid of lime and acetic acid, being careful not to use any metal instruments. This method was apparently successful after three treatments, and I dismissed my patient, both of us being much gratified with the results obtained. Imagine my disgust when, a week later, my patient returned with the statement that the teeth had remained all right until the fourth day, when the right began to darken until it was a decided shade of blue-black. I immediately removed the gutta-percha and treated with chlorin again, getting a good color, but my patient was back again in a few days, presenting the same blue-black discoloration. Feeling assured that I had not reached the cause of the trouble, I gave the patient an appointment some time ahead, in order to gain time, and proceeded at once to consult books and friends, reaching the conclusion that I had an auric-chlorid stain. I then wrote to Dr. Kirk, who advised a plan of treatment which was carried out in detail, as follows: First removing all metallic fillings, which, of course, meant the beautiful contour which had undoubtedly got me into all this trouble, and carefully avoiding the use of metal instruments of any kind, the rubber-dam was adjusted and the cavity was thoroughly washed with a solution of Labarraque's solution four ounces, distilled water four ounces, muriatic acid c. p. ten drops, using the entire amount in order to insure thoroughness, followed by washing with hot distilled water and desiccation with hot air. A fifty per cent. solution of sodium peroxid on asbestos was then applied for fifteen minutes, and then an application of dilute sulfuric acid, ten per cent., was made. This was well washed with hot water, and a second application of sodium peroxid for five minutes, following with the acid, was given, and the tooth was again thoroughly washed with distilled water, as hot as could be used, and, after drying and desiccation with hot air, a gutta-percha filling was introduced,—the tooth having regained its normal color. The object was, first, to remove the auric-chlorid stain. The auric chlorid being soluble chlorin water, this was accomplished by the chlorin solution. Second, to remove the discolored organic matter as far as possible by the action of the sodium peroxid; and third, by the action of the acid upon the sodium peroxid to produce hydrogen peroxid, thereby increasing the bleaching by mechanically removing the contents of the tubuli by the evolution of gas produced by the reaction in them. The final washing is of course necessary to get rid of the by-products of the treatment. It is now about eight months since the work was done, and the teeth have not shown any signs of darkening again.—*Cosmos.*

NATIONAL ASSOCIATION OF DENTAL FACULTIES.*

The eleventh annual session of the National Association of Dental Faculties was held at the Hygeia Hotel, Old Point Comfort, Va., commencing Saturday, August 4, 1894; the president, Dr. H. A. Smith, of Cincinnati, in the chair.

The resignation of Dr. J. E. Cravens as secretary was accepted, and Dr. Louis Ottofy, of Chicago, was made secretary *pro tem.*

The following faculties were represented:

Baltimore College of Dental Surgery—B. Holly Smith.
Boston Dental College—J. A. Follett.
Chicago College of Dental Surgery—T. W. Brophy.
Harvard University, Dental Department—Thomas Fillebrown.
Kansas City Dental College—J. D. Patterson.
Missouri Dental College—A. H. Fuller.
New York College of Dentistry—Frank Abbott.
Ohio College of Dental Surgery—H. A. Smith.
Pennsylvania College of Dental Surgery—C. N. Peirce.
Philadelphia Dental College—S. H. Guilford.
State University of Iowa, Dental Department—W. O. Kulp.
University of Michigan, Dental Department—J. Taft.
University of Pennsylvania, Dental Department—Jas. Truman.
Vanderbilt University, Dental Department—H. W. Morgan.
Louisville College of Dentistry—F. Peabody.
Southern Medical College, Dental Department—C. V. Rosser.
University of Tennessee, Dental Department—J. P. Gray.
University of Maryland, Dental Department—F. J. S. Gorgas.

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*We are indebted to Dr. Hise, of the *Cosmos* for this report.—Ed.

Royal College of Dental Surgeons of Ontario—J. B. Willmott.
Columbian University, Dental Department—H. C. Thompson.
Northwestern University Dental School—G. H. Cushing.
American College of Dental Surgery—Louis Ottofy.
National University, Dental Department—J. Roland Walton.
College of Dentistry, University of Minnesota—T. E. Weeks.

The following schools were admitted to membership during the meeting:

Western Reserve University, Dental Department, Cleveland, O.—H. L. Ambler.

Western Dental College, Kansas City, Mo.—D. J. McMillen.

With reference to the application of Howard University, Dental Department, the Executive Committee recommended that in consequence of changes in and inadequacy of its dental department the application be rejected. The report was adopted.

The report of the Executive Committee recommending the admission of the University of Buffalo, Dental Department, to membership, was amended by the addition of the following clause, and then adopted: "When the honorary degrees conferred upon Messrs. Southwick and Howard are returned to the university and revoked, and official notification of such revocation filed with the secretary of this association."*

The amendment to rule 5 offered by Dr. Hunt, last year, making the rule read as follows, was adopted unanimously:

> "(5.) STANDING OF UNDERGRADUATES IN MEDICINE.—Undergraduates of reputable medical colleges, who have regularly completed one full scholastic year, having attended at least seventy-five per cent. of a five months' term, and passed a satisfactory examination in the studies of the freshman year, may me admitted to the junior grade in colleges of this association, subject to other rules governing admission to this grade."

The following new applications for membership, with their recommendations, were reported by the Executive Committee:

Dental Department, Cleveland University of Medicine and Surgery, Cleveland, O. Recommended by Drs. J. Taft and J. E. Garretson.

Cincinnati College of Dental Surgery, Cincinnati, O. Recommended by Dr. James Truman, T. W. Brophy, F. J. S. Gorgas and J. A. Follett.

Birmingham Dental College, Birmingham, Ala. Recommended by Drs. H. W. Morgan and C. V. Rosser.

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*The Dental Department of the University of Buffalo complied with these conditions on Aug. 13, 1894, and is therefore admitted into full membership.—LOUIS OTTOFY, *Secretary*.

University College of Medicine, Dental Department, Richmond, Va. Recommended by Drs. J. F. S. Gorgas and H. W. Morgan.

Atlanta Dental College, Atlanta, Ga. Recommended by Dr. H. W. Morgan and the faculty of the University of Tennessee, Dental Department.

The amendment to by-law 4, which was offered by Dr. Hunt last year, was laid on the table.

The resolution offered last year by Dr. Sudduth, directing the addition of Latin and physics to the entrance examination, was also laid on the table.

The special committee appointed last year to consider the matter of the vote of censure passed upon the Baltimore College of Dental Surgery reported, through its chairman, Dr. C. N. Peirce, recommending that no further action be taken. The report was adopted.

Dr. Louis Ottofy offered a recommendation, which was adopted, that all colleges, members of this association, shall increase the college course of 1895–6 to not less than six months.

The following resolution from the Executive Committe was adopted:

> *Resolved*, That any college or colleges making application for membership in the National Association of Dental Faculties shall be required to secure and present to the Executive Committee the approval and indorsement of the board of dental examiners of the state (where such boards exist) in which such colleges are located, before their application can be considered.

The following from the executive Committee was laid on the table:

> *Resolved*, That we regard it as inconsistent for any member of the faculty of any college holding membership in this body at the same time be a member of any state board of dental examiners.

The report of the *ad interim* committee with reference to charges preferred against the University of Maryland, Dental Department, was referred to the Executive Committee, which reported as follows:

> "Your Executive Committee respectfully report that they find that the University of Maryland, Dental Department, in the reception of certain students did violate the regulations of this association, through a misapprehension of the rules, as it is interpreted by your committee that the regular sessions of all colleges close with their commencement exercises."

The report was adopted.

Dr. Guilford moved that rule 11, p. 12 of the "History" be understood to mean that students coming from a college not a member of this association will not be given credit for any time spent in such institution.

The annual dues were increased from $3.00 to $5.00 on motion of Dr. Cushing, the increase to take effect in 1895–6.

On motion of Dr. Truman, the special committtee on preliminary examinations was instructed to have prepared by a competent person and present at the next annual meeting a list of questions of a standard, covering every branch required, in the grammar schools up to the point of admission to the high schools.

On motion of Dr. Abbott, it was ordered that each college should each year present its announcement, noting any changes, the secretary to note and publish all important changes in the annual report of the association.

On motion of Dr. Morgan, all the schools were required to comply with the rule regarding dissections.

On motion of Dr. Ottofy, a committee of three was appointed to revise the constitution and by-laws, with the further instruction, on motion of Dr. Truman, to drop the qualifying term "by."

The following were introduced, and under the rules lie over till next year.

By Dr. Peirce:

Resolved, That, in view of the recommendation of the Executive Committee, this association will require that all colleges, members of the association, shall extend the term of the session of 1896–7 and of succeeding sessions to not less than seven months each.

By Dr. Truman:

Resolved, That on and after the session of 1898–9 the regular session of each of the colleges belonging to this association shall be extended to four years.

By Dr. Ottofy:

Beginning with the session of 1896-7, the examinations conducted by the colleges of this association shall be in the English language only.

By Dr. Ottofy:

Beginning with the session of 1895-6, no college shall be permitted to retain membership in this association if it is conducted or managed, in whole or in part, by any person or persons who do not practice dentistry in accordance with well-recognized or generally accepted forms, generally known as dental ethics, or if they are owned in whole or in part by men or women who are engaged in disreputable dental practice, or if any college have upon its list of trustees, the faculty, demonstrators, or in any other capacity, any one who does not practice dentistry in accordance with the principles above mentioned. This shall refer to dentists only.

By Dr. Ottofy:

Beginning with the session of 1896–7, the following shall be the requirements for the admission of students to the colleges of this association:

a. A certificate of having successfully completed at least one full year's course of study in the collegiate department of any college or university registered by the regents of the State of New York as maintaining a satisfactory standard.

b. A certificate of having passed, in a registered institution, examinations equivalent to the full collegiate course of the freshman year, or to a completed three years' academic course.

c. Regents of the State of New York pass cards for any forty-eight counts.

d. A certificate of having passed the matriculation examinations of any university in Great Britain or Ireland, or of having completed a course of study recognized as an equivalent therefor.

e. A certificate of graduation from any registered gymnasium in Germany. Austria, or Russia.

f. A certificate of the successful completion of a course of five years in a registered Italian *ginnasio* and three years in a *liceo.*

g. The bachelor's degree in arts or science, or substantial equivalents, from any registered institution in France or Spain.

h. Any credential from a registered institution, or from the government in any foreign state or country, which represents the completion of a course of studies equivalent to graduation from a registered New York high school, academy, or from a registered Prussian gymnasium.

By Dr. Gray:

Resolved, That law 7 of the by-laws, which now reads "attendance upon three full courses of not less than five months each in separate years shall be required before examination for graduation," be amended by substituting "six" instead of "five," to take effect on and after the year 1896-7.

By Dr. Willmott:

Resolved, That at least twenty-nine months intervene between the beginning of the freshman year and the date of graduation.

The Committee on Text-books presented the following report, which was adopted:

Your Committee on Text-books would report that only two works of this character have been presented for its consideration:

One, a work on "Dental Anatomy and Pathology," by Dr. C. F. W. Bödecker, of New York, 700 pp.; and the other a smaller and less pretentious work of about 75 pp., on "Operative Technics," by Dr. Thomas E. Weeks, of Minneapolis.

Both of these works are in press and nearly completed. The treatment of their subjects is full, clear, and concise, and the illustrations numerous, well executed, and for the most part entirely new.

Your committee would therefore recommend these two works for indorsement as text-books.

Suitable resolutions regarding the death of Drs. R. B. Winder and W. H. Eames were presented and adopted, and the secretary was instructed to communicate a copy to their respective families.

The following officers were elected for the ensuing year: Frank Abbott, president; S. H. Guilford, vice-president; Louis Ottofy, secretary; H. W. Morgan, treasurer; J. Taft, B. Holly Smith and Thomas Fillebrown, executive committee; James Truman, Truman W. Brophy, and Francis Peabody, *ad interim* committee.

Dr. Abbott, the newly elected president, was installed, and appointed the following committees:

Committee on Schools—J. A. Follett, F. J. S. Gorgas, Louis Ottofy, C. N. Peirce and Truman W. Brophy.

Committee on Text-Books—J. D. Patterson, A. O. Hunt, J. B. Willmott, T. E. Weeks and J. P. Gray.

Adjourned.

OBITUARY.

PROF. R. B. WINDER.

PROF. WINDER, dean of the Balitmore College of Dental Surgery, died July 18th, 1894, at his home in Baltimore, of fatty degeneration of the heart. Dr. Winder was born in Virginia, graduated from the Baltimore College of Dental Surgery in 1867. In 1873, with aid from other prominent dentists, he founded the Maryland Dental College. This College and the Baltimore were united in 1879 and Dr. Winder elected Dean in 1882 which position he occupied until his death. Dr. Winder was an indefatigable worker in College and the profession owes much to his efforts for the elevation and advancement of dentistry. We express our sympathy to his bereaved family.

G. W. KELLEY.

MR. KELLEY, the genial traveling salesman of the firm of H. D. Justi & Son, Philadelphia, died July 28th, 1894. He was highly esteemed by all who knew him, and his loss will be greatly felt especially by the firm with whom he has been associated for more than a quarter of a century.

BRIEFS.

— One dose of seng will cure the worst case of heartburn.—*Med. Brief.*

— Morphia should not be given hypodermically in nephritis with albuminuria.

— Applications of Listerine and glycerine, equal parts, will speedily cure thrush.

— Opium is a good capillary stimulant and thereby a great factor in the healing of sores.

— Magnesium sulphate, in ten grain doses daily for several weeks will carry away warts.

— Dr. J. A. Frazier says that he has had success in bleaching dark joints in porcelain teeth, with 25% pyrozone.

— Accidental spots of blood on the clothing can be promptly removed by the application of pyrozone.—*J. E. Woodward.*

— For tenderness of a tooth after root canal filling Mr. Baldwin uses fluid extract of Jamaica dog-wood, asserting that it has a far better effect than tincture of aconite and iodine.

— When a better knowledge of the nervous relations of the teeth has been acquired, I feel quite certain that many doubtful oral conditions will be better understood and properly classified. —*L. L. Dunbar.*

— For a cement for setting crowns, etc., Dr. Rollins mixes together, with heat and careful working, 1 part gutta percha and 3 parts vermillion. It resists the action of the fluids of the mouth better than oxid of zinc.

— Instead of paraffine which scales off as soon as wet, melt together rosin and wax on a spatula, and pour on cement filling after it has stood a few minutes. After a day or two it will take a polish almost like ivory.—*E. T. Darby.*

— A two per cent aqueous solution of trichloracetic acid to moisten the pumice is perfectly harmless. I have used it in my practice for some time, and find it far superior to tincture iodin for removing the "green stain" on children's teeth.—*W. H. Jones.*

— I know that while regulating irregular teeth is good and conservative practice in a great many cases, it is not the kind of work you want to beg into.

I know that no alloy filling is perfectly finished until it is dressed after crystallization.

I know, upon the whole, tobacco is a great enemy to the teeth.

I know that the dentist who strictly insists on monthly settlements, is going a long way towards the bread and butter there is in the calling.

I know that I have never removed a bridge or crown that smelled like a geranium.—*J. R. Osborn.*

SOCIETIES.

NORTHERN OHIO DENTAL SOCIETY.

At the annual meeting of this organization the following officers were elected for the ensuing year:

President, Henry Barnes, Cleveland.
Vice President, J. F. Dougherty, Canton.
Rec. Secretary, F. W. Knowlton, Akron.
Cor. Secretary, L. L. Barber, Toledo.
Treasurer, Chas. Buffett, Cleveland.

The next annual meeting will be held at Put in Bay, Ohio, June, 1895.

AMERICAN DENTAL ASSOCIAITON.

The American Dental Association elected the following officers for 1895.

President, Dr. J. Y. Crawford, Nashville, Tenn.; First Vice-President, Dr. S. C. G. Watkins, Mount Clair, N. J.; Second Vice-President, Dr. Thomas Fillebrown, Boston, Mass.; Recording Secretary, Dr. Geo. H. Cushing, Chicago, Ill.; Corresponding Secretary, Dr. Emma Eames Chase, St. Louis, Mo.; Treasurer, Dr. Henry W. Morgan, Nashville, Tenn. To fill vacancies on Executive Committee, Dr. H. A. Smith, Cincinnati, Ohio; Dr. C. N. Peirce, Philadelphia, Pa.; Dr. Louis Ottofy, Chicago, Ill. Next place of meeting is Asbury Park, N. J.

SOUTHERN DENTAL ASSOCIATION.

The Southern Dental Association elected the following officers for 1895:

President, Dr. H. E. Beach, Clarkesville, Tenn.; First Vice-President, Dr. John S. Thompson, Atlanta, Ga.; Second Vice-President, Dr. Louis P. Dotterer, Charleston, S. C.; Third Vice-President, Dr. J. W. Seals, Stuttgart, Ark.; Corresponding Secretary, Dr. E. P. Beadles, Danville, Va.; Recording Secretary, Dr. S. W. Foster, Decatur, Ala.; Treasurer, Dr. H. A. Lawrence, Athens, Ga. Vacancies on the Executive Committee were filled by the election of Dr. S. B. Cook, Chattanooga, Tenn. and Dr. V. E. Turner, Raleigh, N. C. The next place of meeting is Atlanta, Ga.

NATIONAL SCHOOL OF DENTAL TECHNICS.

The National School of Dental Technics perfected its organization by adopting a constitution and by-laws, and electing the following officers:

President, Dr. D. M. Cattell, Chicago, Ill.; Vice-President, Dr. Thomas E. Weeks, Minneapolis, Minn.; Secretary-Treasurer, Dr. J. F. Stephan, Cleveland, Ohio.

Executive Board—Thomas E. Weeks, Geo. H. Wilson, Henry W. Morgan.

The objects of this association are the mutual improvement of its members and the unification and extension of technical teaching in America.

Its membership is confined to Professors of Operative and Prosthetic Dentistry, and Teachers of Technic in the colleges belonging to the National Association of Faculties.

Eleven Colleges are represented in the charter membership, and fifteen more have filed their applications for membership.

OUR AFTERMATH.

Appointment.—We are pleased to announce that Dr. T. E. Weeks, of Minneapolis, has been added to the editorial staff of the *Dental Review*.

A New Title.—It is now A. W. Harlan, M.D., D.D.S., M.A., the latter title having been conferred recently by Dartmouth College. We heartily congratulate Dr. Harlan on the deserved recognition.

GRADUATES who defy the Code of Ethics have their names stricken from the lists of alumni in at least one dental college. This rule should be adopted by every college in the Faculties Association.—*Western Journal.*

ADDED TO THE NATIONAL FACULTY ASSOCIATION.—At the meeting of this body at Old Point Comfort, in August, the Western Reserve University, Dental Department, of Clevěland, Ohio, was unanimously elected to membership in the Association.

NEW APPOINTMENTS.—Drs C. I. Keely, of Hamilton, and J. W. Jackson, of Jackson, have been appointed members of the Ohio State Board of Dental Examiners to fill the vacancies caused by the resignation of Drs. L. E. Custer and G. Molyneaux.

MUSIC HATH CHARMS.—Dentists appreciate everything good; at the Northern Ohio Dental Society, at Put-in Bay, the Anesthetic Quartet, composed mainly of Canton dentists, rendered some excellent music which was greatly enjoyed by the assembly and many urgent requests were made that they go to the Ohio State Dental Society prepared to give the members another musical treat.

DEATH FROM THE BITE OF A PATIENT.—A case of considerable interest to both physicians and dentists lately occurred in Berlin. A young dentist, Dr. Bernstein, extracted a tooth for a lady patient. In some way she suddenly closed her mouth, biting his finger. A few hours later, intense pain and swelling ensued, and the finger was promptly amputated. But despite the operation and every other remedial measure that the physicians could apply, death occurred on the third day, from septicæmia.

GOOD ADVICE.—I cannot but believe that the only dignified, professional, manly way, is to continue within professional lines, keep out of the newspapers, and leave the advertising business to those who know more about it than we do; to diffuse information that is legitimate, whenever we have the opportunity to do so in a place in which we know that it will be respected, and thus in time surely to build up a reputation that cannot be successfully attacked, and which will secure the respect, even of that smart Alick, the modern newspaper reporter.—*Practitioner and Advertiser.*

DENTISTRY IN FRANCE.—Foreigners who wish to practise dentistry in France, will in the future, have to pass the ordinary examinations and obtain the diploma of dental surgeon. Those who were already practising on January 1st, 1892, will benefit by the transitory arrangements provided under the new law. The condition of things is much the same as when our Dentists' Act was passed. We are also reminded of the time when old practitioners came up to take the newly instituted diploma at the College of Surgeons. At present a similar class of men in France, are furbishing up whatever they knew of anatomy, and kindred subjects. The series of examinations for the diploma commenced last month at the Frculty of Medicine in Paris, and the majority of the candidates were provincial dentists. A selection from the questions asked shows the field is tolerably wide, so extensive even, as to include the comparative anatomy of the generative organs!—*Jour. Brit. Asso.*

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CONTRIBUTIONS.

PORCELAIN WORK.*

BY J. H. DOWNIE, D.D.S., DETROIT, MICH.

THE working of porcelain, in form in continuous gum plates, has been known to the profession for a great many years, although it has never come into general use. The working of it, by the dentist however, in the form of crowns, bridges and inlays, is of quite recent date. There is no class of work which interests the profession more at the present day, and it is, without doubt, the coming work in dentistry. The manner in which it has been received, and the grand success which numbers have had with it, are good evidences of this. To be sure, some have failed to make a success of it, and have already thrown it aside; but their lack of the knowledge of how, properly, to do the work, in no way condemns it. Because hundreds of dentists put in poor gold fillings, is no reason why we should consider that a failure, which has served so grand and noble a purpose. The days when glaring gold is admired, will soon cease to be, and the truly artistic operator will endeavor to imitate nature, and replace the lost organs, and portions of them, with a substance which matches so nearly in color that it can scarcely be detected.

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*Read at the Northern Ohio Dental Society, June, 1894.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.]

Porcelain crown work has been practised for quite a number of years, and when properly done, is one of the most satisfactory operations in dentistry, to both the patient and the operator. The porcelain crown has come from the old fashioned pivot tooth, set with a wooden peg, down through various stages, each one being devised to overcome some difficulty with the former. This has led to the devising of the crown fused to a metallic cap, previously fitted to the root, and backed up with porcelain; this is the crown with which we have to deal, in this paper. With it we get a perfect adaptation to the root by means of the platinum cap, which prevents the splitting of the roots, prevents the joint from decay, and the washing out of cement, and strengthens the attachment of the crown. The anterior portion of the band is covered with porcelain of the same color as the facing, so there is no metal showing, and no necessity for cutting off the root far above the gingival margin, and lacerating the gums. It is made with the teeth used for other work, so that no special tooth is required. The backing is fused onto the facing, making a perfect union, so it is not necessary to protect the point with metal, to prevent the facing being broken off. The facing of a Richmond crown being always sure to break off, if not protected at the point with the metal backing, is no reason to suppose that a solid porcelain crown is not sufficiently strong. In the case of the metal backed crown, there is no union between the backing and the facing, the porcelain front being held in position by the two small pins alone, which certainly makes a very weak attachment. By the porcelain process, the backing is fused on to the facing, forming a perfect union, which makes, in the finished case, a solid porcelain crown.

The Logan crown, which has served so good a purpose in the past, is sufficient evidence of the strength of a solid porcelain crown. It cannot be truthfully said of it, that the porcelain is not sufficiently strong, as we have very rarely seen one broken. The porcelain is not the weak point in the Logan crown; the difficulties with it are, getting the proper adaptation, liability of the post to break and the root to split. These may be, in a measure, overcome by banding, but in doing this we present to view a strip of gold across the base of the crown, which once puts upon it the artificial stamp.

The numerous ways in which the baking of the crown may be modified to fit the special case, and the means which we have at hand for its construction, are great advantages in the porcelain process. A crown may be made from almost any plain tooth, for either metal or rubber work, or from almost any tooth crown manufactured. The preferable tooth for this kind of work, is the flat back tooth, such as is used for bridge work. The root should be ground off flush with the gums, the tissues being pressed away to allow of its being dressed down as far as possible without lacerating them. As the root enlarged at this point, leaving, when ground off, an overhanging edge, it is necessary to dress it off around its circumference, in order to properly fit a cap to it. This can best be done with metallic disks and sharp scalers. The measurement of the root is taken with a small wire, using a small dentimeter to handle it. The wire, when removed, should be cut on the opposite side from the twist and straightened out. Laying this on a piece of platinum, (30 gauge), a mark is made to show the exact length. The band is cut a little longer than marked, which allows, when the ends are beveled, for the making of a lap joint.

The soldering, as in all cases of porcelain work, is done with pure gold. The band is fitted to the root, and a cap soldered over the top, the cap being perforated to correspond with the root canal. The post may be made from almost any kind of platinum wire, but the most suitable material is square iridio platinum. The end of the wire is flattened with a hammer, a little broader than the space between the pins of the tooth, and a notch filed in each side, so that it may be placed between the pins, which are then bent over it. This holds it sufficiently firm without soldering. The tooth or facing with post attached, may now be set on in position, and waxed in place on to the cap, after which it is removed and the cap filled with an investment of equal parts pulverized silex and plaster. This when set, holds the cap in position to the post, after the wax has been boiled out. The case is now ready for the adding of the porcelain. This material is mixed to a paste with water, and applied with a sable brush. It is built around the anterior portion of the band, and well out on the cap, but not over the pins of the tooth. After the first fusing, these pins are filed or ground away, and in the case of a very close bite, the facing may be ground away at the point of contact. More body is now added, to give the crown the desired contour, which, when fused, completes the case.

Porcelain bridge work has much to commend it to the profession. It has no joints to absorb the secretions, and certainly merits the name of sanitary bridge work. The unsightly gold may be dispensed with in all places except where it is necessary to make an attachment to a gold cap; and with this exception, the natural appearance can be almost perfectly restored. No gold cusps or cutting edges are required to protect the bridge teeth, for precisely the same reason that they are not needed in the crown work. The crown already described is used as a support for these bridges, the only difference in its construction being, that when intended for bridge work, after setting it up in wax, it is invested, and the cap and pins soldered. This allows the crown to be set in position without the porcelain backing, and an impression to be taken with modelling compound. A model is run, the bridge teeth are waxed in, and the case invested. After removing the wax, a bar of iridio-platinum is fitted from the posts of the supporting teeth across under the pins of the bridge teeth, and soldered in position. The case may then be removed from the investment and the porcelain packing added and fused on. When it is necessary to use a gold cap for the support of a bridge, it is made of an alloy of gold and platina, (22 kt. gold). This admits of being soldered with pure gold, is quite hard, so that its wearing qualities are excellent, and goes through the heat of the furnace without oxidation. The bar is soldered to the cap, the porcelain added and fused, and the case handled in every respect as when porcelain crowns are used for supports.

Porcelain inlaying is a grand thing in certain cases, and it is much to be regretted that the present existing circumstances do not warrant its being used more extensively. The difficulty with inlaying, is that we have not a suitable cement for setting. There is no doubt that sooner or later we will have a cement suitable for this purpose, which will make this the ideal filling. The best method we know for making them is to burnish platinum foil over and into the cavity, thus forming a matrix, into which the porcelain is built and fused. Body may be added and fused two or three times until the required contour is obtained. The platinum is then peeled off, and retaining points or grooves cut into the porcelain, with the edges of a diamond disk; also undercuts made in the cavity, when the piece is ready for cementing in. The mistake is often made of taking too small a piece of foil with which to make the matrix. This should be large enough to hold easily in position with the thumb and finger of the left hand, while it is being burnished into the cavity with the right. This overlapping foil, by which the matrix is handled, is left on during the process of baking. There are two principal points wherein lie the secret of having a good fit with an inlay; First, in making the walls of the cavity beveled outwards for a little way from the margin, so that when the platinum is removed, the plug will fit tightly on the margin as it bevels out, and will set in the thickness of the platinum removed, thus taking up the space occupied by it and making a perfect fit at the margin.

Second, in only partially filling the matrix with body, the first time it is baked, then replacing in the cavity and burnishing down the edge again, this corrects any springing of the matrix. For labial cavities, where there is no force to be exerted which will tend to loosen the filling, they may be used with Hill's Stopping, using a warm instrument handle to press them into place. This is perhaps more reliable as to lasting qualities than any cement which we have at the present day.

The Jacket crown, which is a platinum cap with a porcelain facing, is in certain cases very valuable. Its use is indicated for undeveloped teeth, usually called rice or peg teeth. These may be built out, and the normal appearance fully obtained. It is also of use for decayed teeth, where the pulp has receded considerably, and is in a healthy condition. It is of no use for decayed teeth of normal size, if the nerve has not receded, and they set in their proper position in the arch; because they must be ground so near to the pulp in order to get the facing on, without its being too prominent, that the death of that organ is almost sure to result. There is no good reason why they should ever be used in any case where the pulp is not alive.

To construct this crown: Make a deep band or ferrule of platinum, to fit the tooth, which has previously been ground slightly tapering on its sides, and lingual surface, and flat and receding considerably on the labial surface. The inner portion of the band, which stands up from the tooth, is clipped off, and a flat piece soldered on to make the sloping lingual surface, (supposing the crown to be an incisor or cuspid), and the anterior portion of the band ground very thin, except around the gum margin, this thin anterior portion is malleted down against the tooth, using a large foot plugger, and folding down the upper corners when necessary. A tooth is selected, either a flat back, or a plain tooth for rubber work. It is ground away flat at the back, tapering down to as thin an edge as possible at the base. After grinding until it will set in the proper position, the cap is removed and the facing stuck on with a little porcelain body. The piece is then set on a tray, in which is a little ground silex to keep it from shifting around while in the furnace. It should be very carefully heated up in order that the facing may not be thrown off. When cool, more porcelain is added around the edges, to securely attach the facing, and, after fusing, the crown is ready to be cemented in place. All these operations in porcelain are made infinitely more practical by the use of the low fusing porcelain body, which enables us to back up the tooth without etching its face, to fuse on to a bridge which is soldered to a gold cap, and to match the colors almost perfectly.

CAPPING NERVES.*

BY WILLIAM H. STEELE, FOREST CITY, IOWA.

In order to attain success in an operation which has for its object, the preservation of vitality in the exposed tooth pulp ; it is necessary that the pulp be healthy, and that it is so protected as to maintain this condition. Place the rubber dam on the tooth to be operated on, and one or two adjacent teeth ; in order to have plenty of room and light to work. The rubber being in place, and the cavity being properly prepared ; take a piece of very thin copper, place it on a block, and with the round end of of a very small instrument, or a suitable size ball burnisher, press it down into the wood, making a shallow cup-like disk. Next, take a general view of the cavity and exposure ; to determine the size and shape to cut the disk ; the diameter of which should be such as to permit the edges of the disk, to rest on the sound dentine that forms the border of the exposed orifice.

Mix fine powdered asbestos with carbolized resin, to form a thin paste ; put a small quantity of this on the sunken side of the disk, and place quickly and carefully in position over the exposed nerve.

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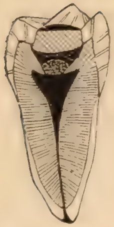
* Extract of a paper read before the Iowa State Dental Society, May, 1894.



Now with some good cement, fill in around the sunken edges of the disk; building up even with the highest part, making as nearly as possible a level bottom to the cavity, and holding the cap firmly in position. It is *very important* that the cavity of decay, should be cleared of all loose particles, before setting the cap; this should be done by gently syringing out the cavity with warm water, containing a few drops of listerine, before setting the cap.

See cut illustrating sectional view of tooth, showing nerve cap in position.

FORMALDEHYD.

BY J. S. CASSIDY, M.D., D.D.S., COVINGTON, KY.

The aldehyds belong to a class of organic compounds intermediate in composition between alcohols and corresponding acids.

An alcohol by means of atmospheric oxygen, or certain other agencies, may lose one molecule, or more, of hydrogen, and thus change directly into the typical aldehyd; an aldehyd may be reconverted into the alcohol by taking up nascent hydrogen, but if exposed to the air, it inclines to become oxidized into the corresponding acid.

Formaldehyd was discovered by Hoffmann about 30 years ago. It is usually obtained by the influence of O on methyl alcohol—wood spirit—according to the equation.

$$C\,H_4+O=H_2O+C\,H_2O$$

Methyl alcohol. Formaldehyd.

$$C\,H_2O+O=C\,H_2O_2$$

Formaldehyd. Formic acid.

By reference to the formula of each molecule, it will be seen that the aldehyd, as indicated by its name, is alcohol, less hydrogen, and the corresponding acid is aldehyd, plus, one atom of O. The name of the aldehyd is generally taken from that of the acid which it produces, instead of the alcohol. Thus methyl aldehyd is known as formaldehyd and ethyl aldehyd, as acetaldehyd.

The reactions here shown are suggestive of some of the chemical changes in which aldehyds may take an active part, but aldehyds are not restricted in their affinities to the taking up of nascent H on the one side, or of O on the other; they are capable of combination with many compounds. For instances paraformaldehyd, will give up its O in order to unite with ammonia, forming hexmethenamin $(C\,H_2)_6N_4$, a monacid base; it will also permit its O to escape in the presence of H_2S, resulting in trithiom ethene as per equation.

$$(C\,H_2)_3O_3+3H_2S=3H_2O+(C\,H_2)_3\,S_3$$

Thus we perceive that two at least of the typical compounds produced by putrefaction, viz, ammonia and hydrogen sulfid are destroyed by formaldehyd.

Pure formaldehyd is a gas, readily soluble in water. A 40% aqueous solution, made by Schering of Berlin, and bearing the proprietary name of Formalin, has been employed more or less by surgeons in Europe and America, as a disinfectant and germicide.

According to the literature available on the subject, it seems that Läw in 1886, called attention to the antibacterial action of formic aldehyd; and in '92, Aronson of Germany, and Berlioz and Trillat of France corroborated his conclusions, by extended careful experiments. In '93 Drs. J. Stahl and Hauser of Germany, Drs. DeBuck and Vanderlinden of Belgium, and Dr. Valude of France, and during the present year, Drs. Griffiths of London, and Alleger of Washington, D. C., experimented with Schering's preparation, and ascertained that one per mille, to ten per cent. solutions were effective in destroying the most resistant micro-organisms. It was found that a one per cent solution completely disinfected suppurating wounds and infected instruments, as well as inhibited the growth of pathogenic germs in many favorite cultures. The claim is also made that 40% solution formalin applied to soft tissue or to the skin a few times, causes a separation of the part without suppuration. This claim suggests the possible efficiency of this agent in union with arsenic, for destroying pulps, and for dessicating the remnants of pulps in inaccessable root canals.

The calculations of Dr. Stahl that four f. drachms of formalin in ½% solution, used in the form of spray, were sufficient to disinfect a large room, are also suggestive of the ability of formaldehyd, when absorbed by porous substances, to evaporate, and keep up continuous disinfection in a given area. For this purpose little blocks of charcoal, porcelain biscuit, or perhaps more convenient for the dentist, small plates consisting of a mixture of either molding sand, or infusorial earth, and pulverized pumice, each one part, plaster two parts, and water q. s.; the plates after drying, soaked in formalin, and placed one each, in the several receptacles for instruments and appliances, will give off for an indefinite period the formaldehyd vapor, which according to its molecular formula, $C H_2O$, approximates in density, that of the atmosphere, and in consequence diffuses regularly and rapidly throughout the enclosed space.

Although formaldehyd evaporates at all ordinary temperatûres, it condenses on, or in, porous substances in the active form of paraformaldehyd, $C_3H_6O_3$, but as in aqueous solutions, it comes off from them in its ordinary condition, except with more energy.

It is not a poison relatively; its odor, while not unpleasant, is persistent, and affects one, it seems to me, similarly to the gentle irritation of the Schniderian membrane produced by breathing in the immediate neighborhood of a populous active hill of ants: this fact is not strange however, for formic acid, $C H_2O_2$, is characteristic of these industrious little bodies.

Its vapor does not affect metallic instruments, nor do its solutions any more than water. Its influence on albuminoids, according to my own experiments, is not to coagulate, but to sterilize, by combining directly with them, to form a permanent homogeneous asceptic mass.

Putrefying matter, as hodge podge of mucus, blood, pieces of dental pulp, etc., submits to rapid disinfection, by a ten per cent. solution, and fresh muscular tissue, placed for a moment in a twenty per cent. solution, assumes on drying, a condition similar in appearance to the erstwhile *jerked* buffalo meat of those great plains of our boyhood's wild and woolly conception of the still romantic west. Yelk of egg, by one immersion, is cooked to a turn, and albumen on drying, after but one dose, takes on the appearance of those horny, unattractive, though practical exhibitions of the corn doctor.

The outcome of our efforts to mummify or cook the contents of root canals, must be left to the future to decide, owing to the short time in which the drug has been in our possession. But the test of time thus far has been eminently satisfactory.

LOCAL ANESTHETICS.*

BY L. E. CUSTER, D.D.S., DAYTON, O.

FROM the time that a deep sleep came over Adam, that one of his ribs might be painlessly removed for the well-being of Eve, agents have been employed in a great variety for producing insensibility to pain. Opium and hyoscyamus were used by the ancient Egyptians, and the heroes of Grecian myth produced wonders with hemp. Mandrake produced such profound slumber that a limb might be painlessly removed during its influence, and alcohol still possesses sufficient strength that a man may wake up in the morning with a bruised head and blackened eye and wonder how he came by them.

The whole subject of painless dentistry including local anesthetics has been so exhaustively gone over by the Michigan State Society, just met, that little remains but what would be a repitition of its work, so, instead of presenting an elaborate paper upon this subject, we will only touch upon a few of the more vital parts and close with what is known as Infiltration Anesthesia.

Pain is a necessary safeguard of these bodies of ours and is so interwoven with the motor and special sense functions of nerves that it can only be overcome with great danger to the vital processes, respiration and circulation. There are many operations in dentistry which involve a small area of sensitive tissue and which are quite painful enough to demand an anesthetic of some kind, although hardly justifying the risk of a general anesthetic. Such cases are met by the injection of an agent into the circulation at the point of operation, the topical application to the surface only which is absorbed by the underlying tissue, and by refrigeration.

This not being a body of students it is unnecessary to go into methods and appliances as you are all familiar with them, but there is one point I would urge and that is the cleanliness of the needle and mouth. They must be asceptic. It is a recognized fact in surgery that there is more danger of septic poisoning from a puncture than from an open cut. In a hypodermic injection we not only have a puncture, but if we are not careful we have a puncture in a hot-bed of micro-organisms and their products.

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*Read before the Northern Ohio Dental Society, June, 1894.

The needle must be asceptic and the mouth should have been washed with a germicide and disinfectant, none of which is more effective than bichloride of mercury 1-1000 and peroxide of hydrogen equal parts.

Since the discovery of cocaine for local anesthesia, there has been no single drug introduced of any marked value. Cocaine has become so popular that it is not only used alone but has become the base of nearly all formulæ for local anesthesia. No single agent approaches it in potency and at the same time no agent seems to be quite so erratic in its action as cocaine, not as an anesthetic but in its influence upon circulation and respiration. The needle may hardly be removed before the patient shows signs of syncope, palpitation or dyspnœa. Or on the other hand the operation may have been completed and in the midst of the most promising outcome, alarming symptoms of cocaine poisoning set in. These irregularities of cocaine are generally attributed to the idiosyncrasies of the patient, but it is my belief that quite as much is due to the irregular methods and quantities used in injection. At one time a large quantity may be used with apparently no disturbance whatever, and again a very small quantity may bring on alarming symptoms. To my mind this is easily explained. In one instance the contents may enter into the arterial circulation, when it will be quite as effective as an anesthetic and produce no immediate signs of poisoning, while in another instance it may mostly enter the venous circulation, by which it is quickly carried from the desired point of action to the heart and lungs, thus transferring the action from the point of injection to the vital centers. If the alkaloid has entered the arterial system, the cocaine poisoning would be shown some time after the injection, while if it enters the venous system, these symptoms almost immediately follow as the result of injection into the arterial system, and is usually of a milder nature, because of greater dilution in the blood. It passes through the arteries and capillaries and is more largely diffused, so that it reaches the heart and lungs in less quantity. If the injection finds way more easily into the venous system it does not pass through the capillary circulation and quickly reaches the vital points in almost the pure state.

The combination of cocaine with other agents, I believe only adds to the danger without making it more effective. We do not know certainly what new agent may be formed by the addition of chloroform, chloral, carbolic acid or alcohol. One of the simplest and best formulæ is that given by Dr. N. S. Hoff:

℞	Cocaine	gr. ss	
	Morphia sulph.	$\frac{1}{6}$ gr.	tab. 1
	Atropine,	$\frac{1}{80}$ "	
	Carbolized water, 2%	gtt xxv.	

Tropacocaine is a recent form for which much is promised. It seems to be an ideal anesthetic, possessing all the good qualities of the muriate of cocaine and none of the bad.

While a topical application is not so effective as a hypodermic injection, it has an element of safety which recommends it. A heavier per cent. may be used than for injection and when the membrane has been well dried with the warm air blast, this method gives adequate results in superficial operations.

Before the administration of cocaine it is well to fortify the patient. Unlike with the use of a general anesthetic a systemic antidote may be administered, without combatting a local anesthetic. A cup of strong coffee, or an injection of morphine may sustain the system through any irregularity.

Special attention is to be paid to the respiration. If it ceases and the circulation is still going on, no matter how feebly an agent may be injected into the circulation which will stimulate the respiratory centers; for this purpose an injection of 1-10 gr. strychnine is probably the best. For heart failure, medicaments may be inhaled, and the most effective for this purpose is nitrite of amyl, which paralyzes the inhibitory cardiac centers. An agent may also he injected for heart failure, but since it has to take effect through the circulation of the blood, it is evident that it can only avail in a weak pulse and is of no account whatever if the heart has entirely stopped. For this purpose an injection of ten to twenty drops of the tincture of digitalis is best.

Reduction of temperature is a local anesthetic of no small importance. Where carefully used it is prompt, safe and effective. As a condition for the perfect performance of nerve function, there must be maintained a certain temperature, which is normal to the organism. If that temperature is lowered, neural activity is lessened and anesthesia is produced in proportion to the departure from normality, so that it is quite possible to reach a point of complete anesthesia or extreme numbness. It is not necessary to actually freeze the tissue, as is often done in deep operations. It is much better to operate slowly and repeat the application. A great variety of agents have been used for this purpose, but none are so well adapted for dental purposes as chloride of ethyl.

INFILTRATION ANESTHESIA.

In 1891 the per centage of cocaine in solutions for injection, was so low that it became a question as to whether pure water alone would not do as well. Sleich of Berlin, was first to demonstrate that pure water in sufficient quantity, when injected, acted as a local anesthetic. Many operators upon finding their cocaine solution exhausted, or for other reasons have since used water alone, with apparently as good results as when injecting cocaine solutions. The experiments of Sleich upon the injection of water for local anesthesia, which he calls "*Infiltration Anesthesia*," when reported to the Berlin medical society, were accompanied by numerous cases and were enthusiastically received by Prof. Virchow and the other members. A report says, "Over and over again this method of infiltration anesthesia has been employed in hundreds of cases, simply because surgeons prefer infiltration-anesthesia to the anxiety of a chloroform narcosis, the dangers of which stand in no proportion to the importance of the operation."

The injection of pure water is painful and it is not until a minute after the injection that anesthesia occurs. This is in a measure overcome by reducing the temperature by the ether or ethyl spray. The experiments showed that a number of agents might be used with the water to act as an anesthetic, without producing irritation. The most effective was solutions of common salt. The various per cents from two to six were tried, but the two per cent gave the best results.

In explanation of this phenomena, the author says, "The cause of anesthesia by infiltration is not a simple one, several factors are at work; first, the pressure of the injected fluid and the removal of the blood from the infiltrated tissues. After a properly performed injection, they appear perfectly white. That is, instead of the tissue juices, the foreign mixture is incorporated in all the lymph vessels and areolar spaces, while the blood is gradually forced into the neighboring vessels. But besides this pressure and anæmia of the tissues, temperature plays a prominent part." A low temperature is more effective. Every edema of the skin would be insensible did not the injected fluid, which causes the pathological edema, contain the same amount of salt (six per cent.) as the serum of the nervous fluid. If one produces an artificial edema with other fluids with or without a little common salt, the whole region of the artificial swelling will become insensible and will enable one to operate without causing pain. "This," he says "is briefly the principle of infiltration anesthesia." When we study the methods ourselves, we find that in order that a nerve can communicate sensation, it must be constantly supplied with an amount of nutrient fluid which is normal to it, it must be in its natural investment and must be of a certain temperature. When the salt solution is injected it takes the place of the blood, so that the normal nutrition of the nerve ending is forced out. The solution differs largely from blood; it is an abnormal surrounding. Again, according as the temperature is lowered the nervous reception and transmission of sensation is reduced.

In all the cases which present to us, he is the safe and wise operator who selects the local anesthetic most suitable for the case. If it is one of small depth he will use the least dangerous, a topical application or refrigeration, and only use injection when operating to some depth. The injection of a foreign substance into the circulation is a matter of no small importance and we should see to it that the agent is pure and the needle and membrane asceptic.

KNICKKNACKS.*

BY F. E. BATTERSHELL, D.D.S., NEW PHILADELPHIA, O.

Dumb-Bell Glasses.—A two-and-a-half inch magnifier at one end and a reflector of the same diameter at the other. They are a great convenience at the dental chair. First focus the large magnifier over a defective filling, a broken bridge, or a misfitting denture—the misfortune of some other chip of the dental profession—then, with a slight twist of the wrist, bring the mirror around and a surprise awaits us. Gazing into the glass we see not ourselves alone, but a motley back-ground of grinning mouths gaping over our shoulders. When this beam has been plucked from our eye we may use the glasses to a better purpose by lending them to the patient.

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*Read before the Tuscarawas Valley Dental Society, 1894.

Bits of Rubber.—Advise the patient to polish gold crowns and bands with the rubber tip of a lead pencil. The rubber should be cut to a wedge shape and dipped in a batter of water and gritty powder. The large rubber erasers, with powdered pumice-stone and chalk, are very serviceable for cleaning the lingual surfaces and rim of an artificial denture as it becomes discolored by the secretions or calcareous deposits. Rubber strips from one-eighth to three eights of an inch wide and three or four inches long, cut from rubber dam, make useful finishing strips for approximal surfaces of amalgam fillings. The strip stretched between the teeth, compresses and tends to draw the surplus material toward the labial and lingual borders. The angles of the filling can be moulded, by the elastic strips, with more care and perfection than by the rigid pluggers.

A Glove of Honey.—In the warm days that are now before us, when a rubber glove can not be worn with comfort while engaged in prosthetic work, an anointment of honey for the hands will subserve the same purpose. Take clarified honey and rose-water, or perfumed water of each one pint, add two drachms of listerine. Mix and bottle. It holds the dirt in suspension and dissolves very quickly when immersed in water, leaving the hands soft and clean. For winter use add glycerine.

An Incident.—About seven years ago, a German tramp presented to my friend, the jeweler, a partial denture to be repaired. The plate was *brass;* the teeth, three in number, were of bone; he had constructed them himself, so he said. From the crudeness of the piece—soft solder being used to unite the teeth and base—he was credited with a truthful saying. How he formed the plate to fit the mouth (it was an adhesive plate), and how he filed the bone to resemble teeth is not known. However, the classically wrought bones matched his own shady masticators passably in shape, size and color. The base seemed to have agreed with him quite as well as silver or gold—because he was a tramp?—perhaps!

Permit me again to call your attention to the employment of massage. I wish this time to direct your attention particularly to its use in those acute affections which occur when the patient is beyond the reach of the specialist, and which results disastrously sometimes, ere relief can be obtained. If the patient be instructed to rub the gums with finger and thumb, *without dis-*

couragement, until the tooth-ache subsides, he may not blister his mouth with vile drugs, nor may the dentist suffer the ignominy of a failure in a valued filling, or other tedious and skillful *dens technique*. I offer you the "office right" without money and without price. Shake well before using. For tooth-ache, neuralgia, swollen gums, and—teething gums. Use *ad libitum.*

SOUTHERN DENTAL ASSOCIATION.

Reported for the OHIO DENTAL JOURNAL by Mrs. J. M. Walker.

THE Southern Dental Association convened in twenty-fifth annual session, at Old Point Comfort, Virginia, August 2, 1894.

The meeting was called to order by the President, Dr. B. Holly Smith, Baltimore, Md., and opened with prayer by Dr. W. H. Morgan, in the absence of the Chaplain of the Post, whose presence had been expected.

Dr. E. P. Beadles, Danville, Virginia, then delivered an address of welcome on the part of the Virginia State Dental Association. He said that he was only a substitute, standing in another man's place, but that he felt himself both too short and too narrow to fill the space allotted to one who for more than half a century had been helping, by mighty efforts, to upbuild and strengthen the dental profession; one whose voice had been for many years heard in our annual meetings, and the results of whose pen were read in the dental journals all over the land; who was one of the vice-presidents of the Columbian Congress; who had been president of the Southern Dental Association, and who had filled every position, both civic and professional, with honor to himself and credit to his profession and his native State —Dr. W. W. H. Thackston—a true type of the "Old Virginia Gentleman."

He said, in the language of Dr. Crawford, I wish you, through me, to shake hands with every Virginia dentist, and to feel that our hearts are in that grasp.

We welcome you, our brothers from the North, because to know each other better will make closer friendship; you from the West, because we wish to imbibe your vim and energy; you from the Pacific slope, that you may compare the ever-rolling Atlantic with the peaceful waters of your own great ocean. We are all brothers, bone of the same bone, flesh of the same flesh. Let us join hands in the work to be done here and make this a meeting long to be remembered in the annals of dental history. "Welcome" is a magic word to Virginians; we have heard it from the time we began to lisp at our mother's knee; the "stranger within our gates" is always welcome.

Dr. Beadles then pointed out on all sides the noted historic spots, which make this region one of the most famous in American history. He concluded his address with the hope that all would find food for both mind and body, that all might depart feeling amply repaid for the trip to Old Point Comfort. Pointing to the white ribbon badge of the members of the Virginia State Association, he said, wherever you see that badge you may feel that you are free to approach and claim friendship with the wearer and that friendship will not be made in vain.

In response to the address of welcome, the President of the Southern Dental Association read his annual address, which embodied a response to the address of welcome, followed by many important suggestions looking to the augmented usefulness of the Association and the advancement of the profession. The address was referred to a committee composed of Drs. J. Taft, J. Y. Crawford and B. H. Catching who, in this report at a later session, presented the following as the most salient features of the address, with the suggestion that the time of the Association could not be more profitably employed than in the discussion of these measures.

1st. The duty of our National Associations toward our state, district and local societies; in what way and to what extent is such aid and assistance practicable; in what way can a more intimate and closer relationship be established?

2d. The power and efficiency of State Examining Boards for good to the profession; what work can reasonably be delegated to them? In what way can they best secure the greatest good?

3d. Uniformity of laws regulating the practice of dentistry; how can uniformity be secured? What benefits would accrue from such uniformity?

4th. To what extent is it practicable for our National Associations to influence beneficially dental education?

5th. What can our National Associations do to aid in the settlement of mooted points in practice? Is a commission for such purposes practicable?

6th. What changes should be made in clinical demonstrations to secure better results than hitherto? Can clinics be employed to advantage in all classes of dental societies?

7th. Can commissions be profitably employed for the investigation and the ascertainment of truth on assigned subjects? With what authority should such commissions be invested?

These points were presented by the committee as worthy of careful consideration.

This report was made the special order of business so near the close of the meeting that only the second and third points were discussed to any extent.

On the second point DR. V. E. TURNER said that it must be borne in mind that if there had not been a necessity for Examining Boards they would never have been created and laws would not have been enacted creating them.

The next disputed point is undoubtedly the examination of holders of diplomas.

Before the organization of the National Association of Dental Faculties, it was not possible for any of the boards to know whether a college was "reputable," or not, and as long as there was an opening for doubts the safest plan was to examine all impartially. Laws have been passed regulating these matters. We have gone before the state legislatures and presented the case and they have said we will give you what you want. We have but just gotten this, and shall we now say, we don't want it any longer? The examination of those holding college diplomas will not militate against progress in dentistry! Then why should we decry the laws requiring it? The associations can do nothing in this matter. It is the affair of the legislature of each state. Shall we go before them now and ask them to wipe out what we have just advocated as essential to our progress?

DR. FRANCIS PEABODY: The progress of all large bodies is necessarily slow. State examining boards were and still are an absolute necessity, but some step must be taken to overcome the existing state of affairs in regard to the recognition of the examinations of our state board by other boards. I have been in practice forty years, but if I should want to locate in Mississippi I should have to be examined, if I went to Georgia I should have to go before another board, and so of Alabama. And yet those boards are a necessity. If colleges graduated only competent men, there would be no necessity for examining boards, but there are still some colleges which work for the dollars and not for the conferring of knowledge. If a nucleus could be formed, if only one state, say one Southern state, would recognize its neighbors, the idea would extend all around the borders, and great good would naturally result.

Dr. Edwards, Louisville, Ky., deprecated the assumed antagonism of the colleges and examining boards. If it had not been for the work of the examining boards the colleges would not have attained their present high standard. It is also a fact that the examining boards compel men to go to the colleges: they see that men are properly equipped. Before the enactment of dental laws, two-thirds of the men practicing dentistry were non-graduates. The boards drive men to the colleges; that is the chief object and aim of state dental laws. As to the propriety of each state board in recognizing the certificates of all other boards, that would do very well if all boards were appointed by properly qualified parties; but in some of the states the board is appointed by the Governor—by what virtue is he qualified to select the members of a medical or dental examining board? In other states this duty is entrusted to the state dental association.

Dr. J. Hall Moore: The State Examining Boards have done great good in elevating the standard of professional education. There is no conflict now between the National Association of Faculties and the National Board of Dental Examiners.

Dr. Peabody: As to examining men with diplomas, it is well known that some men get through college with very little education. A man should not be passed on his diploma; he should pass on his knowledge.

Dr. John S. Marshall, Chicago; If it could be so arranged that the Examining Boards could participate in the final examinations of the colleges, placing their names on the diplomas, that would prove them reputable. A diploma signed by the faculty and a representation from the state boards would be a passport in any state in this union, and the examining boards of the various states would recognize such a diploma. It is not necessary for the boards to examine all the branches which are taught in college, to prove a man's ability to practice in dentistry. I doubt if any member of the state examining boards could pass the final examinations of our college. A man who has been in practice a number of years gets rusty on those branches for which he has no practical use.

Dr. H. B. Noble endorsed the position taken by Dr. Marshall, and he hoped that some steps would be taken by means of which the endorsement of the state examining boards could be given to college diplomas.

Dr. Marshall said that his point particularly was that representatives of the state boards should participate in the final examinations of the students in the senior classes; to see the written papers and assist in marking them; to take part in the oral examinations, and when satisfied that the students were properly qualified, to sign the diplomas as a passport to practice in any state whose examining board was thus represented.

Dr. Crawford: Before we can reach the solution of this question we must consider how the state examining boards are created, and what are the functions of the state boards. The state board is first a judicial body; it is also an executive body; and it is a supervisory body. As a judicial body it is the highest authority in the state on questions which pertain to its jurisdiction. The Supreme Court of the United States can not go behind the actions of the state board. Decisions in various states have decided that. How then can an examining board be appointed by a state society? They have no authority to confer judicial powers.

Dr. Peabody: The state society of Kentucky is a chartered body for the purpose of creating the state board, which is elected by the state association.

Dr. Craweord: I doubt if their authority would hold good in law. A state society may very properly recommend individuals to the Governor, but he alone can endow them with judicial powers. I have confidence in the interity of our officials to do what is right when it is put before them.

Dr. Geo. J. Friedrichs, New Orleans, declared their state laws to be "class legislation" enacted for the benefit of the professor rather than the protection of the public. Too much has been done in the way of keeping out good men. We need to turn-about-face and get out some of those that are already in. No law is right which deprives a man of any of the functions of citizenship. I can't go into a certain state and enter into the practice of dentistry, because I have no dental college diploma. The only leg I stand on is that of M. D. That deprives me of my inherent rights and is contrary to the spirit of our institutions. It is dangerous doctrine. I believe if I were to go before the courts of any state, and claim my rights as a citizen of the United States, I believe I could beat any of your dental boards. The question has never been tried on that line.

Dr. Beadles, Danville, Va., thought the suggestion of Dr. Marshall impracticable. There are too many state boards, too many colleges and too many students graduating. It would be impossible to look after them all. A man who fails before the board ought to fail to pass; he will go through if he ought to, if he comes from a college of high standards he will never fail; men have slipped through college—checked through—but the man who ought to pass the board will pass.

Dr. R. R. Freeman: We are drifting toward a point where all can unite—the good of the whole people. There is no conflict in the truth. The men of the dental profession love to uphold and sustain the right. The leaven in the lump is working; it is in the spirit of the times, in the atmosphere. The people see we are seeking their good. The boards will do what is right. Men who come with proper credentials will be recognized as worthy, but not all the diplomas in the world, with their red and their blue ribbons can let in the charlatan.

Dr. Friedrichs: Dr. Freeman speaks for the people; I speak for the dentist. The man who has his diploma, or his board certificate must be able to go from state to state without further expense or trouble. A man who has exhausted his field must be able to seek another.

On the third point, Dr. Donnelly, Washington, D. C., spoke of the great necessity of harmonizing and unifying the state dental laws. As they now stand there are great incongruities and inconsistencies. A fixed educational standard should be established. A diploma or state certificate of the attainment of this standard would bring all in practical unity. Let a law be drafted which shall meet the endorsement of the National Association of Faculties, of the National Board of Examiners, of the American Dental Association, or the Southern Association. I think the profession would all unite on such a law. Then carry it before the legislature of one state after another and get it adopted. It would be a disadvantage to any state not to adopt a dental law having such endorsement. Dr. Turner said we could not ask for a change in the law we had demanded; I say we could, upon the ground that the law had accomplished what it was designed for and in the natural course of progress, we now need something different. It puts a man at a great disadvantage to have to contend with this great diversity of laws. (Dr. Donelly referred his hearers to a decision of the United States Supreme Court in a West Virginia case, published in the *Dental Cosmos* late in 1890 or early in 1891).

Dr. Francis Peabody spoke on the same line. He hoped that through the present meeting of the different associations something would be developed that can be presented to the different state legislatures and that will prove satisfactory to the colleges, to the examining boards and to the profession.

In this connection, Dr. R. R. Frdeman offered the following resolution:

Resolved, That the Southern Dental Association, with a view to unity, harmony and concerted action, appoint a special committee on dental legislation, to represent it in any movement in which its co-operation may be sought or its "good offices" accepted for the improvement and unification of dental laws.

The following committee was appointed: Drs. R. R. Freeman, M. F. Finley, J. Y. Crawford.*

On the fifth point—The consideration of mooted points in practice.

Dr. J. Y. Crawford said he had been disappointed in not having been able to carry out a plan he had designed for the settlement of our mooted question. He had understood that a paper would be presented on the methods of treating and filling root-canals. He had prepared a considerable number of teeth, properly imbedded in plaster, and he had hoped to have had the root-canals filled by the individual advocating certain methods; the teeth to be then submitted to a commission who would make sections of the roots and ascertain definitely which method was best calculated to fill the requirements of the case. The paper had not been presented, however, and his scheme had fallen through.

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*This subject was also very fully discussed in the American Dental Association, and the following committee on Unification of Dental Laws appointed: Drs. B. Holly Smith, A. W. Harlan and J. Y. Crawford, to confer with similar committees from other associations.

Dr. Jno. S. Marshall said that for a commission to take into consideration "mooted points in practice," it would be necessary for them to review the scientific work presented; to go over experiments, study methods, etc. This would require both time and money, and unless the Association was in a position to vote a fund for that purpose, the plan would fall through. In the American Dental Association money had on different occasions been voted to various sections to work out different lines of special scientific thought, but it is necessary to have money to carry this out successfully. He added that he would gladly vote for money to be spent in such scientific investigations.

Dr. E. Turner suggested that a committee be appointed to take the matter in hand and report at the next meeting. This committee can suggest the amount considered adequate for this purpose, and if the Association can raise it, we will have the advantage of thorough scientific investigation of certain questions, which will be reliable information in the conclusions reached.

On motion of Dr. Jno. S. Marshall a committee to consider certain "mooted questions in practice" and report to the Association at future meetings, was appointed by the chair as follows: Jno. S. Marshall, H. B. Noble, R. R. Freeman.

In the American Dental Association a commission of five—Drs. C. N. Peirce, J. S. Marshall, E. C. Kirk, M. L. Rhein and J. Taft were appointed to investigate as thoroughly as possible, etiology, pathology, and treatment of pyorrhœa alveolaris, and report at the next meeting. This commission was authorized to draw on the treasury of the Association for a sum not exceeding seventy-five dollars to meet the expenses of this work.

(To be continued.)

AMERICAN DENTAL ASSOCIATION.

Reported for Ohio Dental Journal by Mrs, J. M. Walker.

The American Dental Association convened in thirty fourth annual session, at Old Point Comfort, Va., Aug. 7, 1894.

The meeting was opened with prayer by the Rev. H. C. Cheatham, Hampton, Va. After an eloquent address of welcome on the part of the Virginia State Dental Association, and the transaction of some routine business, Dr. J. D. Patterson, Kansas City, delivered his

ANNUAL ADDRESS.

In his address Dr. Patterson paid a touching tribute to the memory of the many members of the Association who have passed away during the past two years. He then turned his attention to a number of suggestions looking to increased usefulness of the Association. He lamented the "undigested science" and "trivial repetition" which burden the records of the society, instead of original scientific matter, the result of diligent labor and thorough investigation. He deplored the lack of self-sacrifice on the part of the many based on the mistaken idea that to but few is given individual power, but, he said, this is given to all who really work for it. There is no department of science in investigation will not reward the individual; not half-learning, not superficial science; this brings but ephemeral reward.

The historic method of working by "sections" fails because so few members of the sections assist in the work assigned. So long as the work is voluntary, each one waits for the others, and the result is that the work is all done by a few enthusiastic members and new talent lies undiscovered. If each one would realize that his membership obligates him to make *some* report, be it much or little, strength would be developed which would give a new impetus to the American Dental Association.

The proposed revision of the constitution offers the opportunity of incorporating valuable new features, among others that of a "supervisory committee of work" with clearly defined duties looking to more perfect scientific results. Another would be the reservation of the association proper for scientific work, leaving all business routine out of the regular sessions. In a brief review of the allied forces in dental education, the colleges, professional literature, dental legislation, etc., he noted memorable activity and improvement during the past two years. He hoped that some plan would be formulated for the unification of dental laws in the different states so that a certificate of registration in one state would be recognized in another. He pronounced the present status ot dental legislation a travesty on justice and equity.

He recognized the work of the World's Columbian Dental Congress as a prominent factor in the activity of the past two years, and rendered due meed of praise to those whose labor of love has been so richly rewarded. He regretted the great increase of unethical practitioners as a drag on professional purity, reputation and advancement; he characterized them as "anarchists" of our calling. No line too strict can be drawn in this direction; we must permit no infringement, upon the strictest letter and spirit of the code of ethics.

The President's address was referred to a committee of three —Drs. Abbott, Crenshaw and Brophy—whose report, at a subsequent session, (Wednesday, 8 p. m.) placed the prominent points of the address before the Association, resulting in an interesting discussion. Their consideration of certain points in the address led them to suggest: 1. That in the revision of the constitution, clinics in surgical and prosthetic dentistry be re-established, though this step was not directly suggested in the address. After some discussion *pro* and *con*, Dr. C. N. Peirce said that it was well known that clinics had not been abandoned by the American Dental Association except after very serious consideration. He moved that the matter be referred to the Executive Committee "with power to act."

Dr. Thos. Fillebrown pronounced this a cowardly way of meeting the question. As a matter of fact the Association either wants or does not want clinics. He moved that the matter be laid on the table indefinitely. This motion being duly seconded, was carried.

2. That the suggestions in regard to registration certificates of one state being made valid in another state without further examinations were impracticable, so long as the members of the examining boards were selected in so many different ways.

On motion of Dr. B. Holly Smith a committee of three—Drs. B. H. Smith, A. W. Harlan, J. Y. Crawford—were appointed to confer with similar committees from other dental associations —national, state and local, in an effort to secure unification of dental laws in the country.

3. Various methods were suggested of securing more efficient work in the sections, especially *something* from each member. The most feasible idea was that suggested by Dr. Weeks of Minneapolis; that the chairman of the section make a specific request of each member of the section. It would of necessity be optional with each one to answer or to refuse to answer, but the various

replies received, properly edited by the chairman, would in itself furnish a special report!

Other portions of the address were referred to the committee on revision of the constitution and by-laws and the subject was passed.

The subject of the coming celebration by the dental profession of the fiftieth

ANNIVERSARY OF THE DISCOVERY OF ANESTHESIA,

by Horace Wells, of Hartford, Conn., was duly introduced by Dr. J. D. Thomas. He mentioned the steps taken by the Odontological Society of Phila., but said that the subject was one of national importance, and too great for local societies to handle. On his motion a committee of nine, as follows: Thomas, Fillebrown, Taft, McManus, W. H. Morgan, W. C. Barrett, Harlan, McKellops and Weeks, was appointed, to consider the matter and report to the Association.

Dr. McManus called attention to an article on this subject recently published in the *Century Magazine*, as being not only misleading but as containing statements absolutely false, and desired that the Association re affirm the resolutions adopted in 1864, based on the results of an official investigation by a congressional committee. (The facts in the case are contained in a work on Modern Anesthesia, published in 1867, by the late H. F. Smith, United States Senator from Connecticut.)

Dr. Brophy suggested that in any resolutions adopted by the Association, the words "United States of America" be omitted as this is not a local affair. The benefits of modern anesthesia extend over the whole world.

Dr. Harlan thought it essential to insert explicitly the date of the publication of the results of the legal investigation that fully established the claims of Dr. Horace Wells; to fix the time and place when and where the investigation was held and where the documents are published that give the results of this legal investigation.

At a later meeting the committee reported a series of resolutions and a partial program for the celebration, which will be published when all arrangements are perfected.

On motion of Dr. H. A. Smith,

Dr. J. N. Crouse made a report on the present status of the litigation being conducted by the

DENTAL PROTECTIVE ASSOCIATION.

He said that the past year had been one of special activity in securing testimony in the Low Bridge case, testimony having been taken in Denver and even in California. The testimony is all in now, and the case will be argued in October, and the result of all this labor will be made known. He considers that there is abundant evidence in to defeat the Low patent in any court.

Dr. Crouse requested that a committee of three be appointed to meet a similar committee of two from the Southern Dental Association to examine the books of the Dental Protective Association, papers and vouchers, notes and mortgages, and pronounce whether the monies of the association had been honestly and economically used. The available funds of the association were about $3,000.00 apart from a mortgage note of $10,000 on real estate, on which it would not be possible to realize at present without great sacrifice. He did not know what the lawyers fees in the present case would be, but possibly it might be necessary to impose an assessment on the membership rather than touch the mortgage fund. The chair appointed Drs. H. A. Smith, C. E. Esterly and Louis Jack on this committee. Drs. R. R. Freeman and V. E. Turner having been appointed by the Southern Dental Association. At a later session the committee reported that they had examined the books and papers of the Dental Protective Association and found everything correct and satisfactory. On motion the report of the committee was received and approved.

The resignation of Dr. M. G. Jenison, Minneapolis was received and accepted.

At the night session Tuesday, on motion of Dr. W. W. Walker Dr. Jno. S. Marshall, as treasurer, offered a

REPORT FROM THE EXECUTIVE COMMITTEE OF THE WORD'S COLUMBIAN DENTAL CONGRESS,

Showing the present financial status. This statement embraced detailed account of all monies received by the treasurer, from Foreign countries and from the different states and state societies of the United States, making a grand total of $13,790.05, not including $400.00 in the Columbian National Bank at the time of its failure, from which dividends amounting to 249.74 have been received, making the sum of $14,309.79 received. The disbursements have somewhat exceeded this sum, and by the time the bills for publishing the transactions, including contracts for engraving illustrations, etc., there will be a probable deficit of $1000. The above statement does not include the expenses of the Executive Committee for railroad and hotel bills, etc., amount-in all to some $4000, which has been cheerfully donated to the Congress. It is desirable, however, that the sum of $1000 be raised, to pay for the transactions that may be distributed to those entitled to them, as early as possible. Various methods of covering the deficit were suggested. Finally, on motion of Dr. H. A. Smith, duly seconded, an appropriation of $500 from the funds of the Association was voted to the Executive Committee of the World's Columbian Dental Congress. Dr. Marshall stated that there were three hundred of the memorial medals still on hand and for sale at $10.00 each. Also extra copies of the Transactions, could be secured, and he hoped by these or other means to raise the other $500.

At a later session Dr. Marshall announced that he had raised $260 and hoped to complete the sum of $500 before the close of the meeting. The Transactions had to be paid for and it was not right to allow the members of the Executive Committee of the Congress to pay the bill.

Section I—Prosthetic Dentistry

was then called.

Mr. W. E. Sharp, Binghamton, exhibited and explained

A NEW FURNACE

for general laboratory purposes—continuous gum, porcelain, aluminum and other dental work, etc., which apparently offers many advantages over the other furnaces for similar work now on the market. As now manufactured it is only adapted to the use of gas as fuel (with No. 9A Suffal's foot blower), but will probably be adapted to the consumption of gasoline, coal-oil, etc. In reply to questions, it was stated that it fully replaces the Ake-furnace for continuous gum work, heating up is done very rapidly, there is no lost heat, but the heat can be perfectly regulated to suit the work in hand, whether for low fusing enamel or aluminum casting, or any work for which a furnace is required.

Dr. Geo. Evans, New York, demonstrated his

METHOD OF CONSTRUCTING HOLLOW GOLD DUMMIES FOR BRIDGEWORK.

The band and cusps being completed, a little ball of fluxed solder is placed on a piece of platina 30 or 32 gauge, over which the hollow crown is placed. Heat being applied beneath the platina, the solder flows to the edges all around on the inside. The edges of the platina then trimmed and stoned down, forming a hermetically sealed, hollow dummy.

Dr. Evans also illustrated a method of crowing front teeth, the root being banded on the approximal and palatine sides with no gold showing at the labial surface. A peculiar feature of the method is the means by which the pin is securely fixed in the cap. By means of a suitable die a small countersunk spot is formed in one end of a long-oval disk, the opening of the root canal being reamed out to receive this depressed portion of the cap—fluxed pure gold is is melted into the concave space, through which the pin is screwed, being held firmly in place by the thickness of gold in the depressed portion. The disk and pin is then adjusted to the abutment of the root and trimmed even with the labial portion, the projecting portions at the approximal and palatine sides being snipped and turned back on to the root, removing and annealing as necessary. The porcelain tooth being backed as usual and soldered to the cap in such manner as to secure perfect continuity of all sections of the crown, giving all the strength of the regular crown with no metal appearing at the cervico-labial margin; while simplicity of construction is promoted. The crown is secured to the root with oxyphosphate, but a special feature in Dr. Evans' method is that a film of gutta-percha is put on the pin before inserting it in the cement in the root canal, so that in case of accident it is easily removed, heating the crown in the mouth with a suitable instrument, softening the gutta-percha on the pin so that it is readily withdrawn, leaving the cement in the root canal to be reamed out for reinsertion of the crown.

Dr. Evans' method was discussed by Drs. Freeman, Crouse, Sill, Gardiner, Brophy and others, many questions being asked and answered.

Dr. Brophy said, All this leads us back to the days when we had *clinics*. Such methods as these cannot be clearly and satisfactorily explained without an ocular demonstration. Telling a person how to do these things is never as satisfactory as showing him how it is actually done. I hope the time will come when clinics will be reëstablished in the American Dental Association. Every one would be glad to see the methods of a man like Dr. Evans practically demonstrated.

Dr. H. B. Noble presented Dr. Daly's

METHOD OF LINING VUCLCANITE PLATES WITH GOLD.

A lining which lasts as long as the plate itself and which gives a smooth, even, polished metal surface next to the mucous membrane of the mouth. The lining is produced by depositing crystals of pure gold on one side of a sheet of No. 20 gold foil till it attains the grade of No. 50 or No. 60 foil. The lining material thus has a smooth, polished, bright gold surface on one side and a roughened crystalline surface on the other. To apply it, after the flask has been opened and the wax removed, the cast is varnished with sandarach varnish and dried. A coating of damar varnish is then applied to gain a sticky surface, so that the lining material will not slip or slide out of position. The lining is cut in small pieces varying from one-fourth to one-half inch, varying in shape to suit the surface to be covered. The pieces are laid on with the bright side down and overlapping so that there will be no cracks or uncovered portions, every portion of the surface being perfectly covered with the lining. The overlapping of the small pieces is an important feature in adjusting the lining to the cast. The rubber is then placed as usual, being careful not to have it thicker than necessary, and of uniform thickness throughout. Vulcanize the piece as usual. In finishing up the piece, burnish and brush the gold fearlessly. It cannot be rubbed off. The vulcanite piece thus lined has a solid gold surface and is as cleanly as an all-gold plate. The rubber thus vulcanized, as the gold lining is more dense than by any other method.

Dr. St. George Elliot described a method of swaging through the force of steam power, the work being done with great rapidity, and perfect ease to the operator.

Dr. L. E. Custer described a method of

SWAGING PLATES WITH SHOT INSTEAD OF COUNTER-DIE;

also the process of melting platinum almost instantaneously by means of the incandescent light current.

Dr. Bogue described a hydraulic press for swaging metal plates, giving with very little trouble, a more perfect adaptation to the plaster model than could be secured by the hammer or a pile driver.

Dr. Butler apprehended that it would be found, if carefully tested, that the gold had been thinned to a very considerable extent in places, making the close fit at the expense of the strength of the plate.

Dr. Bogue replied that it was necessary to use judgment in applying the force. One young man burst asunder a ring of malleable iron ¾ inch in thickness.

The subject was discussed and various methods of swaging by mechanical apparatus designed to replace the hand power and sledge hammer of the operator described.

Dr. V. H. Jackson, New York, described, from a series of large size illustrations (copyrighted) and a number of plaster casts, his

"CRIB" METHOD OF REGULATING AND RETAINING APPLIANCES.

In these appliances Dr. Jackson uses German silver wire 14 gauge, using soft solder unless there is great acidity of the oral fluids, or the fixture is to remain long in place. If a permanent fixture to hold in position teeth loosened by pyorrhea alveolaris, he uses iridio-gold or platino-iridium wire. For a strong spring wire he uses piano wire, tinned if it is to remain in the mouth for for some time. The crib springs are of German silver wire slightly larger than the piano wire used. A number of special cases with the fixtures used, were described as illustrated by the diagrams exhibited, which are essential to the understanding of the method.

Dr. J. Y. Crawford asked Dr. Jackson what he thought of the propriety of removing every loose tooth and after the removal of all deposits, replacing the teeth in the mouth.

Dr. Jackson replied that a tooth which had been affected by calcareous deposits was not a fit tooth for replantation. A replanted tooth if held at all was held by granules of living tissue, penetrating the interstices of the tooth substance. Calcareous deposits on the teeth infiltrate thin spaces left after scaling off the deposits creates an inflammatory condition in the surrounding tissues, and the tooth is thrown off. No artificial means can restore the smoothness of surface nature requires.

Dr. W. H. Morgan rose to a point of order. The discussion was invading the field of pathology, which will be discussed in connection with other papers. Dr. Morgan asked Dr. Jackson what was meant by "spring gold"?

Dr. Jackson: Simply what is sold by all dealers as *spring gold*, I suppose it is platinized gold.

Dr. Morgan: The best spring gold is made by the addition of one-tenth part of platinum to pure gold. If two parts platinum are added to the oz. of 22 or 23 k. gold it makes a very good spring gold.

Dr. Jackson: A very important thing would be a non corrodible metal that can be heated many times and yet retain its spring. I have an experienced metallurgist experimenting in this direction and hope to get it yet.

Dr. W. O. Kulp explained a

METHOD OF RETAINING LOOSE INCISOR TEETH

in place, with extensive absorption of the alveolus. His method differs from that of Dr. Jackson, in that the entire lingual surface of the teeth is covered with gold bands, which extend under the free margin of the gum, being cut down to the gum line on the surfaces of the teeth. The portion on the labial surface may be of platinum, which is less offensive to the sight than gold. The bands are all soldered together on the lingual side making a continuous metal surface, securing the loose teeth so firmly that they have been retained in the mouth for twenty years after they were so loose that it was difficult to keep them in place while adjusting the bands. He had utilized the same idea in case of a fracture in the center of the lower jaw, soldering a plate to the bands after adjusting the fracture. The day after this fixture was adjusted, the patient came to me saying "Thank God; I was able to eat a beefsteak for my breakfast." A regular surgeon predicted at the time that there would be no osseous union, but six months later the case was reported a perfect success.

Dr. J. Crouse described

AN AUTOMATIC PUMP,

worked by water pressure, for condensing air in a cylinder, giving a current of air, or a blast sufficient for any purpose desired, whether for continuous gum furnace, or for soldering. He has it connected by piping up to his laboratory table, when he has simply to open a stop-cock to get any amount of air wanted. They are too high priced at present but he hopes to be able to handle them soon at $15.00.

Dr. W. O. Kulp said that Prof. Hunt, taking the idea from the beer pump, had invented an air pump to attach to the water pipe, which only costs four or five dollars and has sufficient force for the continuous gum furnace.

(To be continued.)

ALL SORTS.

A Dental Strike.—Not a strike amongst dentists, but against one. It seems that in France a dentist is attached to all the lucifer-match factories, a very wise precaution in any case, but especially in any point of view. At one of these factories, however, the work-people complained that the dentist hurt them too much, and, as they were obliged to pay him a visit at certain stated intervals, the only way of escape was to organize a strike of all the hands. The dentist resigned, another was appointed, and work was resumed.—*Brit. Jour.*

Aven (C. G.) on The Use of Phytolacca in Dentistry.—I am quite a sufferer from ulceration in the ear. By the use of tr. phytolacca (greenwad), 15 gtts., every hour, I prevented pus forming in my ear. I had a mastoid abscess cut out of my left ear in July, 1889, but this time my right ear was giving me trouble when I used the phytolacca.

I also prevented abscess from forming on the root of my left upper central incisor on two occasions, and have been quite successful with the tr. phytolacca in my practice, in preventing abscesses.—*Items.*

Mitchell (Grant) on Making Copper Caps for Pulp Capping.—I have occasionally used copper caps for pulp capping, made by pressing ball burnishers of suitable size into thin copper on block of lead, and to facilitate the handling of the cap, after it is moulded, and before removing from the lead, take a sharp pointed triangular instrument (the prong of a cheap pair of dividers) and pancture a tiny hole in the middle of cap, this turns out three small triangular points that may be taken hold of with dressing pliers and the cap thus easily placed in any position or place.

Solution of Platinum.—W. L. Dudley finds that platinum black, when moistened with dilute hydrochloric acid on a filter and exposed to the air, is gradually dissolved, platinic chloride being formed. The action seemed more rapid when the filter paper approached dryness. Platinum sponge behaved in a different way, but the effect was not so marked. The chloride was also formed when platinum black or sponge was subjected to the action of a dried mixture of hydrochloric acid, gas and air. Experiments with iridium, rhodium, ruthenium and osmium, in a finely divided condition, yielded similar results.—*Journ. Am. Chem. Soc.*

Allan (Dr.) on Removal of Calculus by Sulphuric Acid.—In the use of sulphuric acid in a ten per cent. solution, with this little platinum spatula, I find I can remove tartar very easily. Ever since Dr. Kirk put in my hands some asbestos fibre, which is fine as cotton, I wrap a little of it around the blade, and I carry the asbestos fibre, after dipping it in the acid, around the roots in places that I could not reach in any other way, and by a little mechanical rubbing or abrasion with the asbestos fibre ond sulphuric acid the tartar is removed very rapidly. With this and ordinary chisels you can go over a mouth and remove at least nine-tenths or all of the tartar with it and not injure the gums in the slightest degree, and certainly not the alveolar process.—*Extract International.*

Perry (Dr.) on A Useful Application.—An eminent surgeon came to me the other day with one of his fingers wrapped up. He said that, while operating, a little poison had got under the skin through a slight scratch. I asked him his remedy, and he said the best thing he had found was acetic acid, which he applied after sucking the wound. He considered that better than anything he had ever tried. It penetrated promptly and quickly, and destroyed the poison with more certainty than carbolic acid or iodoform, or anything he knew of. He spoke rather disparagingly of carbolic acid, but he said acetic acid would penetrate promptly, and was almost certain to act on the poison and effect a cure. He told me the ordinary acetic acid fluid was used. He is an eminent man, and this hint from such authority is worth noting.—*International.*

Littig (J. B.) on the Use of Amalgam Scraps.—I desire to speak of the way in which I utilize old amalgam. I take the scraps, melt them up, and pour into an ingot, which, of course, drives off all the mercury. We frequently want the form of a tooth to make a band or clasp upon, that will be stronger than plaster; and when I have taken my impression, and I realize that I want such a tooth in metal, I simply mix up this old amalgam which I have filed up, and pack into my impression, making the cast of a small tooth, on which I can make my band or clasp. You may ask, "Why don't you use Melotte's fusible metal?" but we do not always have it at hand, and I can use this with wax or any impression material. I file it up after I have melted it, with a coarse rasp. I have with me some of the teeth that I have already made.—*Extract International.*

Steele (W. H.) on Combination Fillings.—I have had such good success for the past fifteen years with combination gold and alloy, in labial and proximal fillings that I give one of my methods for large compound cavities involving the proximal and crown surfaces of molars and bicuspids. Prepare a cavity and set the screw post. Do not drill the hole for the screw post deep enough to weaken the wall of the cavity; it is only necessary to have it of sufficient depth to retain the post in position till the amalgam is packed around it. Put on a good close-fitting band matrice, and fill the cavity from one-third to one-half full (the alloy should always extend up above the enamel line) of alloy, leaving one-third of the screw projecting above the filling. At a subsequent sitting complete the operation with gold, and finish nicely, burnishing all the edges down smooth.—*Items.*

Read (Laurence) on Polishing Velum Rubber.—He said: The question of leaving a polished surface on velum rubber was a matter in which he took some interest, and which he had worked at considerably, some six or seven years ago. His mode was to take a large piece of steel wire about a quarter of an inch thick, to make it red hot, and wherever they wanted a rough surface polished to run it along, which took off the rubber, as if it were being fused. If it was then treated with a little chloroform on wool, a beautiful polished surface was left, just as if it had been baked on a metal mould. The soft rubber baked at the ordinary temperature was in every way satisfactory. He had had some of these soft rubber linings worn for seven years which were perfect in every way, the patients being delighted with the change from hard rubber.—(*Extract Brit. Jour.*)

Death from Hemorrhage following Tooth Extraction.—The patient was a man aged 25 years, who from childhood had been delicate, suffering at intervals from painful joints and digestive troubles. On one occasion in early life, a slight accident resulted in profuse hemorrhage, and twice he nearly lost his life on account of hemorrhage after the extraction of a tooth. He determined, however, to risk it a third time. Nitrous oxide was administered and the tooth removed. Hemorrhage followed, but diminished steadily after the cavity had been packed. It returned, however, during the night, and in the morning the patient was in a state of collapse from loss of blood, the face and lips being pale and cold, while he also had tinnitus aurium and dimmed vision. In spite of treatment by hypodermic injections of whisky, strychnia and saline solution, the patient continued to lose blood, and gradually became weaker, finally succumbing seventy-six hours after the extraction of the tooth. There was no trace of any similar condition to be discovered among the patient's relations. On the maternal side there was a phthisical taint, and on the father's a neurotic tendency.—*Lancet.*

Younger (W. J.) on Pyorrhea Alveolaris.—My experience with this disease (covering a period of over thirty years) has convinced me that it is of purely local origin ; and I am very much inclined to the opinion I promulgated some ten or twelve years ago at a session of the California State Dental Association, that it is due to a diseased activity of the pericementum, caused by disturbed nutrition or a local irritation, and that instead of bone it produces this disorganized abortion, vulgarly called tartar ; itself perishing in the effort by the irritation of its presence.

This is the reason why pericementum is never found under the calculus. And this theory is strengthened by the fact that the constituents of tartar are analagous to that of bone, and also why the pericementum is never in contact with the margin of the calculus ; for there is always a denuded strip of root between it and the membrane.—*Extract Pac. Coast Dentist.*

Greene (J. W.) on Some Timely Hints.—The "foolishest" thing a dentist can do is to put in artificial teeth cheaply. Learn to select harmonious styles, natural colors, and arrange them artistically in the mouth ; then make fits that your competitors cannot, especially in lower sets, and you can get good fees.

If a full lower plate, foolishly called a "denture," has no suction at all, just admit its lack of fit and do it over ; and if you do not know how to make it suck fast, learn how.

All that part of an amalgam filling which comes in contact with the walls of a cavity should be burnished in. And to properly mix the amalgam it should be well kneaded in alcohol. Such kneading will reduce its bulk at least 20 per cent, and of course solidify the filling that much, by disposing of the surplus mercury readily.

About the most expensive luxuries that a dentist can indulge in are: A dingy, dirty office ; unpolished and rusty instruments ; rough hands and unkept nails, and shabby clothing. If he is a poor man he can't afford them.—*Extract Items.*

Milton (S. A.) on a Method of Making Caps for Gold Crowns.—A simple method of making caps for gold crowns, or of getting a matrix for stamping out the cap, is to first have two small flaring Russia-iron boxes made with the bottom placed about one-half to three-fourths of an inch above the base. In the center of the bottom of one have a hole cut the size of the neck of a bicuspid, and the other of a molar of the S. S. White countersunk-pin teeth. These holes should be large enough to accommodate the larger sizes of these forms. Now fill the space beneath the bottom with sand, Melotte's compound, or plaster. Then place on the bench, with the right side up, and press the countersunk tooth into the material below, leaving exposed the desired length of cusp. Smooth off any of the plaster or other material from around the cusp. Now pour Melotte's or other metal, melting at a low temperature, into the box over this exposed cusp, and you have a tip-top die to strike up a cap. For the price of one of these teeth any desired form of cusp can be had; besides, by a trial of the tooth, you can determine whether it will make the most desirable articulation.

These boxes will cost about fifteen cents each.—*Cosmos.*

Patterson (J. D.) on A Useful Hint about Motors.—I have a Eundell motor, and it has been a magnificent little machine ever since it was put up. A short time ago I took it into my head that something needed changing about it, that the contacts were wearing out, and I had a couple of contacts put in—little carbon blocks that press against the commutator. It commenced making a noise, it squeaked a little, and has caused a good many hard words from me in the last two weeks, since it has been charged, which it never did before. It was the smoothest and quietest motor that I have ever seen, as you who have seen it may have noticed. I sent down to the Franklin people to send the man up who had changed the contacts and put the new contacts in, to find out what the trouble was. He took them out and smoothed the rough ends of the contacts, but still the squeak remained. He came up again and puzzled over it for a good while, and finally he took them out and examined them carefully, and he found one of those pencils was of a coarse grain, coarser than the one on the other side, and of bad quality. He went down to the store and brought one up of a finer quality and finer grain and put that in, and everything is just as quiet as it ever was.—*Western D Journal.*

Professional Ethics.—Prior to the graduation of the class of the College of Dental Surgery, of the University of Michigan the following article was prepared and signed by all of the members of the graduating class. It consists simply in an agreement or promise to abide by the requirements of the code of ethics of the American Dental Association and of all dental associations in affiliation with that body. Such an agreement exercises a wholesome influence upon all who promise to conform to its requirements, it also, in a good measure, affords a degree of moral support and strength to everyone, and constitutes a bond of union that should not be lightly esteemed. It is as follows :

"To maintain its dignity and further the honor of the profession which I am about entering, and in loyalty to my Alma Mater and the desire and precepts of its faculty, I the undersigned do willingly and cheerfully promise to abide by the code of ethics of the American Dental Association, and will strive to deport myself in such manner as to claim the respect of the public, the good will of my co-workers in the profession, and the continued esteem of my instructors and brother graduates. If at any time, I should fail to so act, I shall expect to forfeit all claims to personal or professional recognition by my Alma Mater and classmates." *Register.*

Dental Phantom.—Mr. Oswald Fergus exhibited an apparatus known as the "dental phantom," devised to aid students in the earlier period of their study. At a certain time in their career students were expected, and rightly so, to practice experimental dentistry, though not perhaps on their fellow creatures. This was carried out either by drilling suitable cavities in bone or by putting extracted teeth in the jaws of a vise. Both of these methods were good as far as they went, in giving men a certain amount of familiarity with instruments and materials, but they were deficient in the fact that the student had not the surroundings that he had with the patient, and therefore was perhaps apt to learn bad habits. The appliance consisted chiefly of three parts. There was an upright upon which could be planted two representative jaws, each being fitted with a gutter, and into this gutter the teeth that had been extracted were placed. He would suggest that if the operation of extraction was to be practiced the material into which the teeth were to be fixed might be "stent" or some other composition; for filling, ordinary plaster of Paris would be found on the whole preferable. Almost any operation on the human mouth might be attempted with this appliance. There was in addition an elastic band which went round both jaws, forming an artificial cheek, so that the student was really surrounded more or less with the conditions met with in actual life.—*Extract Brit. Jour.*

Osmun (J. A.) on a Uric Acid Solvent.—Granting, for argument's sake that the uric-acid theory is correct, to what extent should we, as dentists, undertake to combat it by treatment, in order to ameliorate this pathological condition we have under discussion?

First, then, when we find an accumulation of serumal tartar, with symptoms of gout, or rheumatism, it would be a wise thing to have a urine analysis made,—which, by the way, does not always show the presence of uric acid, this product often being deposited in the various tissues of the body instead of being eliminated by the kidneys, but if we do suspect it, we can do one of two things: either refer the case to the family physician for constitutional treatment and a report of the condition of things, or we can place the patients on "piperazine," which is perhaps the best uric acid solvent now known. This remedy has no toxic or corroding effect, and can be taken for any length of time without disarranging the digestion or any vital organ. A solution of piperazine in cold water will dissolve twelve times as much uric acid as the same quantity of lithium carbonate. One other important item is, that piperazine always forms a neutral salt, no matter how long it is administered, or in what quantities, which makes it an exceedingly safe thing to use.

After the administration of this drug for a time, a urine analysis should be made, which will show beyond the possibility of a doubt the presence of uric acid; if this be found, the patient should be placed conjointly under the care of the family physician and dentist. Thus, by attacking the disease from both a constitutional and local standpoint, the pyorrhea can be better controlled, and made more amenable to treatment. I merely mention in passing that piperazine is soluble in cold water to almost any extent, and a good prescription is as follows:

℞—Piperazine (Schering's), gr. v;
Solve in aqua ℥ v.

Sig.—Tablespoonful in glass of Vichy two or three times a day.

These facts only emphasize the difficulty we have in diagnosing and finding the causes that lie hidden back of those local manifestations that are so familiar to all. We must not overlook the general health, or conditions such as phthisis, Bright's disease, or any disease which saps the vital forces, each condition contributing to aid and accelerate this affection.—*Extract Cosmos.*

Younger (W. J.) on the Treatment of Pyorrhea Alveolaris.—There are few lesions in surgical pathology more simple of treatment than this same disease, the most essential requisite being skill and manipulative dexterity in order to secure the thorough removal of the calculus and the perfect cleansing of the root. The elimination of every particle of tartar is a *sine qua non* to success. Unless this is done perfectly and absolutely, the disturbing cause of the disease will not be eradicated, and it will in time return.

The return of the disease that so many complain of, is due very often to the fact that complete removal of the tartar has not been accomplished and that the surfaces of the roots have not been thoroughly cleansed. The appreciation of tartar, however, is not always easy, and it requires a certain sensibility in the fingers not common to all persons. It is that touch which makes one violinist superior to another in the development of the tone of his instrument. This is the reason why so many have failed to discover tartar when it existed, and why it has led them to suppose that either the tartar had been completely removed, or that the pyorrhea existed without the tartar.

There is, besides the sense of feeling, an acuteness of hearing by which we can recognize by sound, as the instrument passes over the root, whether it is the substance of the root or an incrustation. But before the removal of the tartar is attempted the teeth and crevices and the little pockets containing the tartar and the calculus itself should be thoroughly sterilized. I prefer the bichlorid of mercury—one to one or two thousand. It 'should be used warm—at least that portion that is injected around the necks of sensitive teeth—in order to prevent the pain that cold applications are almost certain to produce. The sterilization is necessary to prevent the absorption of septic matter, as the gum is almost certain to be abraded by the instruments used to remove the tartar. For the same reason the instruments should be thoroughly sterilized. The water used as the menstruum for the sterilizers should have been subjected to distillation ; otherwise the organic matter and chemicals which are apt to be in ordinary water may be sufficient to decompose or to modify the strength of the sterilizing agent and so negative its action. But, by all means, be sure and sterilize the instruments ; keep them continually in the antiseptic fluid while laid out for use.

In removing the calculus, commence with one tooth and *stay* by it until all of the tartar is removed, even if it takes the full time of the sitting. And as fast as the tartar is scaled off, wash the tooth out with the warm fluid by syringing with delicate platinum-pointed syringes. If this is not done minute portions of the tartar will adhere to the raw surface of the gum, keep up an irritation and prevent the healing process from being established. It is well, when the pockets are very deep, to insert a little lactic acid to dissolve the diseased edge of the alveolus and any minute fragment of tartar which may have escaped the instrument. The root being thoroughly cleansed, and the débris washed out of the pocket, a little tincture of iodine may be dropped into it or else a solution of chloride of zinc, three and one-half drachms to the pint of water, to stimulate its contraction and the production of granulations, and to induce the attachment of the alveolar tissue and gums to the root. If this does not take place then rub quickly with a little wad of cotton, saturated with liquor ammonia, washing out immediately with warm water. This ammonia is to remove the mucous membrane from the healed and therefore unattachable surface of the gums ; and the water is to wash it off before its escharotic action can be established. By this means a healthy granulating surface of the gums ; and the water is to wash it off before its escharotic action can be established. By this means a healthy granulating surface is formed, contraction stimulated, and attachment to the clean surface of the root induced. In case the gum should remain flabby, inactive and indolent then acupuncture should be resorted to. This can be done by rapidly piercing the gum with a sterilized needle. When the amount of the deposit is so great that the alveolar septi has been destroyed, pass a threaded needle through the gums and between the roots of the teeth and approximate them by tying them as nearly together as can be done without the use of much force. If too much force is used the thread will cut through the gum.—*Extract Pacific Coast Dentist.*

EDITOR'S NOTES.

SERIOUS ACCIDENTS CAUSED BY PYROZONE.

During the past month several severe accidents, involving the loss of eyesight, have occurred through the handling of pyrozone and we feel that it is time to sound a note of warning to those using this and similar preparations. The stronger solutions of pyrozone are put up in glass tubes and sealed by drawing the glass to "a point at one end of tube. The directions for opening are to *file off this point*," and herein lies the danger. Dr. Haskell, Chicago, writes that his partner, Dr. Markle, met with a mishap a few weeks ago. He was opening a tube of pyrozone, taking the precaution, as previously, of holding the tube in ice-water, then filing a notch in the neck. Just as he was about to break off the point an explosion occurred and a piece of glass entered the right eye, coming within a hair's breadth of destroying the sight. Since that time two other accidents, resulting more seriously have been reported. One, another dentist in Chicago, who had the sight of one eye destroyed, and a physician, Dr. Edmunds, in Indiana, who met with a s similar loss, and both from the same cause.

Other methods of bottling should be used as the present containers are to be deprecated. Those who unfortunately receive tubes the ends of which are so drawn that the glass is very thin, are liable to have this same experience. Handle with care.

ANTISEPTIC TABLETS.

Antiseptic is a much used word in relation to medicaments and is applied alike to poisonous and non-poisonous drugs. There are on the market several varieties of antiseptic tablets; some intended for use about the mouth, nose and other cavities, while others are intended for the sterilization of instruments, etc. The general term *antiseptic* is misleading and in a number of instances has already caused much confusion and in some cases serious results.

A correspondent in the *New York Medical Journal* sounds a note of warning in the following:

"There is the greatest danger connected with the word antiseptic when taken into consideration in its designative feature in relation to the two kinds of tablets known as the Dr. Charles Meigs-Wilson tablet and another variety of antiseptic tablet known as the Dr. Carl Seiler tablet. The formula of the latter tablet is not only known to afford a most delightful and effectual remedy for the relief certain conditions of the mucous membranes of the nose and other cavities of the body, but the drugs therein are harmless when considered from a toxic point of view. Not so, however, with the tablet made up from the Meigs Wilson formula. In this we have a most deadly corrosive poison to deal with, and what the consequences may be if by error the one should be substituted for the other, particularly if the directions for using the Seiler tablets should be written upon the package in which the deadly substitute has been sent to the patient's bedside, can easily be imagined. Having had a number of such occurrences in my own practice, but where, fortunately, the error was discovered in time to prevent the substitute from being used, is my chief prompter in writing this; besides, I have known it to occur in the practice of other physicians, and recently in one case with terrible results.

It is the duty of all manufacturers of corrosive-sublimate tablets to get into communication with each other and to come to some understanding relative to the use—abuse in this instance—of the word antiseptic in the connection under consideration and to the necessity of doing away with the word entirely, or what would be much better still, with the manufacture of this variety of tablet, which is a menace to the lives of those engaged in its production, and is also a constant menace to the lives of innocent beings as long as they are carried about in the reckless manner which we all, more or less, are constantly in the habit of doing."

CARE OF POISONOUS DRUGS.

A LAW in Germany requires that all drugs intended for internal use be henceforth put up in round bottles, and those for external use put up in hexagonal bottles. This enactment is precautionary against poisoning.

Have you ever in your dental practice hurriedly picked up a wrong bottle and instead of some soothing mixture applied an escharotic or other harmful drug?

If every dentist would make it a point to keep his poisonous, caustic, escharotic and other dangerous drugs in hexagonal or other unusual shaped bottles, he would, at least, feel much safer in handling them and avoid any possibility of unintentionally inflicting a severe burn or wound on the delicate mucous membrane of the mouth or on the tongue or lips of a patient.

Dangerous drugs cannot be handled with impunity.

TRI-STATE DENTAL MEETING.

THAT the three state societies, Ohio, Michigan and Indiana, will hold a joint meeting in 1895, is now assured. At the last meeting of the Ohio State Dental Society a committee was appointed to confer with committees from the Michigan and Indiana societies relative to holding a joint session next year. The committees appointed by the three societies met at Old Point Comfort, Va., during the meeting of the American Dental Association and it was decided to hold a tri-state meeting at Detroit, Michigan, on the first Tuesday in June and continue in session three days. It is proposed that four papers shall be presented from each of the three societies and that two half-days be devoted to clinics.

Dr. J. Taft, Cincinnati, was made chairman of the committees as a whole, Drs. L. L. Barber, Toledo, J. Ward House, Grand Rapids, and G. E. Hunt, Indianapolis, comprise the executive committee, and Geo. L. Field, Detroit, was made chairman of the committee of arrangements. We hope that the various committees will act at once and have all arrangements completed at an early date. With this, nothing will prevent one of the most successful meetings ever held in this section.

NEW PUBLICATIONS.

A Treatise on Pyorrhea Alveolaris. A system for its Prompt, Positive and Permanent Cure. By Junius E. Cravens, D.D.S. Prof. of Operative Dentistry in the Indiana Dental College, etc., etc. W. M. Herriott, Pub., 1894.

This book of 48 pages is a treatise on pyorrhea alveolaris, from the author's standpoint, after 20 years of observation and study of this troublesome disease, and assiduous efforts to discover a cure.

The author claims that absolute cure is possible in every case. This is a strong assertion, but we hope it may prove correct.

Dr. Craven's methods of treatment are beneficial and if the disease can even be held in check for a length of time, it is better than letting it progress without interference until the teeth are lost.

A Retrospect of a Half Century, is a neat pamphlet gotten out by the S. S. White Co., giving a history of the business of manufacturing dental supplies in the United States. It is worthy of perusal.

BOOKS RECEIVED.

A Text-Book of Physiological Chemistry by Olof Hammarsten. New York: John Wiley & Sons, Pub.

BRIEFS.

— The effect of chloride of ethyl is very much increased by dipping the vial in hot water just previous to use.—W. Sims.

— Galalowski proposes to replace cedar oil and other liquids used for oil immersion for objectives by vaseline, whose refractive index is 1.40.

— Blacken your hickory or orange wood wedges with your lead pencil and see if they don't go in between the teeth much nicer.—C. E. Klotz.

— Chloroform is recommended as being one of the best reme edies for the controlling of external hemorrhage, whether arterial, venous or capillary. It may be applied with lint or cotton.

— Don't refuse to take a good dental journal. That community is to be more than pitied, whose dentist is too mean to read or subscribe for one or more dental journals.—D. V. Beacock.

— With cement in conjunction with gold or amalgam, we have a filling that offers but few objections. With a non-irritating cement and an amalgam, sightly and free from thermal and electrical changes, we can command a perfect—an ideal filling. —*S. Roush.*

— Marble dust soap, composed of common washing soap with three times its volume of sifted marble dust added and with four per cent. of lysol. It is intended like the pumice and such soaps, to obviate the necessity for using a hand-brush, which latter is usually full of bacilli.—*Therap. Monatsheft.*

— As an expounder of the principles of Dental Hygiene the dentist comes very near being a preacher of righteousness. It is scarcely too much to say that he is aiding the cause of morality when he sounds ever in the ears of his patients, especially the young, the valuable maxim—"Keep your teeth as clean as your face."—A. T. Peete, *Southern.*

— The editor of the *Pharmaceutische Centralhalle* gives the following method for the prevention of rust: Dissolve one part of paraffin oil in two hundred parts of benzine. Wash the instruments dry in a current of warm air and dip them into this solution, moving the different parts (of scissors, tongs, etc.) and then lay on a plate in a warm room to dry.

— A convenient method of making an articulating plate is: After making the impression, take a little moulding compound, which has been softening while the impression has been taken, put it in a partial impression tray, and take a second impression. Cool and remove from tray. You are now prepared to proceed as in any ordinary case.—R. E. Sparks, *Dominion.*

— An assortment of root-canal pluggers may be made by taking spent nerve broaches and removing any remaining barbs by running a fine file over them while they are held flat upon the bench. They are made smooth by rubbing them a few times with sandpaper. The point can be snipped off to any desired size. They can be handled with a nerve broach carrier.—R. E. Sparks, *Dominion.*

— Even front teeth may be filled nearly full of alloy and then finished with gold, if the tooth is first lined with a coat of thin oxyphosphate to prevent the alloy discoloring the tooth. A like coating between the alloy and the gold will prevent the mercury affecting the color of the gold, though the latter is pressed on to newly-placed alloy. Our preference, however, is to fill the first part with oxyphosphate only.—*Items.*

— Powdered Camphor, prepared as follows, will not again conglomerate. Dissolve camphor in one and a half parts of alcohol, precipitate by the addition of four parts of water. Collect the precipitate and wash with an abundance of water and dry. By keeping account of the quantity of camphor used, the quantity left in the diluted alcohol can be calculated and this solution used for making tincture, etc.—*Der Pharmaceut.*

— Dr. Hugenschmidt recommends the only practical poultice that can be used in alveolar abscsss, a fig boiled in a solution of boric acid and cut in halves, and the surface sprinkled with powdered boric acid. It will in most cases cause the abscess to discharge into the mouth. Should the abscess be far advanced and threaten to break through the cheek, then apply an ice compress with the above.—*Journal für Zanheilkunde.*

— Beck's medium for steel tempering consists of 50 parts colophony, 40 parts turpentine, 10 parts linseed oil and a mixture of powdered salts, consisting of 65 parts ammonium chloride, 6.6 parts potassium sulphate, 13 parts potassium nitrate, 4 parts sodium nitrate, and 11 parts asafœtida. Melt the oils and gums together, and add the saline mixture little by little, whipping it well in. Stir until cold, so as to insure the even distribution of the saline powder.

— In taking impressions of the mouth, where the teeth are undercut so much that a "drag" is likely to result, I find the following method answers perfectly: Syringe and cleanse the undercut tooth, mix some plaster of Paris thin, fill up the undercut with it, allow the plaster to harden, and then trim up; smear the plaster with a little vaseline, then take the impression, and afterwards remove the plaster from the undercut, which has remained firm during the taking of the impression, with an excavator; it will readily come away in one piece.—W. Sutton.

— In frail cavities, I am in the habit of imbedding in the cement a platinum or gold screw-post; sometimes bent at an angle so as to sustain the force of mastication, and building gold or amalgam on this strengthener. In dead teeth, I have, for experiment, imbedded ordinary safety-pin wire into the pulp-cavity, bent from one canal to another, sometimes soldering a cross piece on top, which seemed to secure the attachment of fillings, and even of a crown.—*B. in Dominion.*

— For some years I have been in the habit of directing patients who complain of looseness or lameness of the jaw, sometimes snapping, sometimes not, but with difficulty of closing it regularly, caused by laxity in either the ligaments or muscles, or both, to twice a day, morning and night, take a towel wet in cold water and slap the face, and then take a dry portion of the towel and rub it briskly. This is, perhaps, combining the shower-bath with massage.—Dr. Williams, *Inter.*

SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE.

The 19th annual meeting was held at Geneva, August 6–8. The following officers were elected for the ensuing year: President, Dr. Chas. W. Jenkins, Zurich; Vice-President, Dr. Wm. Mitchell, London; Treasurer, Dr. Chas. J. Monk, Wiesbaden; Secretary, Dr. Wm. S. Davenport, Paris; Executive Committee, Drs. Jenkins, G. C. Daboll, and A. C. Hugenscmidt, of Paris; Membership Committee, Drs. Mitchell, L. C. Bryan of Basel, and Waldo Royce, of Tunbridge Wells.

The next meeting will be held at Boulogne, the first Monday in August, 1895. Wm. S. Davenport, *Secretary,*

OUR AFTERMATH.

Dr. Charles Welch, Wilmington, President of the Ohio State Society, who has been ill since the first of July, is again convalescent.

Young Man Beware.—A Miss Rafferty, of Manchester Township, N. J., is suing Mr. Ives, her former lover, for damages, caused, she avers, by his kissing her until the gold filling in her front teeth fell out. She wants him to heal the aching void.

Get Ready for the meeting of the Ohio State Dental Society nex Dec. at Columbus. A good program is already made up. There will be room for a few more clinics, and if you have anything interesting to show drop a line to J. R. Callahan, Chairman Ex. Com., 97 W. 8th street, Cincinnati, Ohio.

Dr. D. V. Beacock, Brockville, Can., writes: While passing through Fleet Street, in the city of London, England, some time ago, I happened to spy in front of a dental office the following sign "Come try our guinea jaw." I was quite amused, and a few days after while travelling through the rural districts, I chanced to take up a newspaper with the following amusing skit in doggerel verse, I have taken the liberty of sending it to you, as it hits the cheap advertising quacks quite comically:

Come Try Our Guinea Sets of Teeth.

I'm a harmless British householder, I pays my rates and taxes,
And when the school-board precept comes, I never questions axes,
But I says: tis scandalous, that our elastic law,
Should let a fellow advertise "Come try our guinea jaw."

Look here I had the meekest wife, a sort of shemale Moses,
Quite different from that long-tongued wench, who Brown with logic poses,
When dash it, if she didn't spy upon some dentist' door
An invitation to come in, "And try our guinea jawr."

I've never know'd a hour's peace, since she began her jawring,
Except when she's asleep, and she takes it out iu snoring.
And as for grub; tis quite impossible, to satisfy her maw,
Since she has learnt the science of—that awful guinea jaw!

Well sir, I hopes our parliament, won't spy that chap's placard,
Or else with legislation, it will go uncommon hard,
As tis, they're like a flock of rooks, with lots too much of caw,
But what they'd come, you'l believe, (with that there guinea jaw.)

I calls it wicked, that I does—to set a curious trap,
Against a quiet woman's tongue, and make it snarl and snap,
Them dentists is a nuisance, so suppose we pass a law,
To keep for THEIR own wives and brats (that precious guinea jaw.)

The Patient goeth, and he bloweth, yet the delinquent oweth, and the Lord knoweth, the Ohio Publishers are in need of their dues. So send 'em a runnin', for this sort o' dunnin', gives us the blues.

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CONTRIBUTIONS.

CAST ALUMINUM.*

BY DR. HARPER, CHICAGO, ILL.

IN demonstrating to you the Zeller Cast Aluminum Apparatus, I do so with the fullest confidence in it, and also with the assurance of a perfect plate when I open my flask after casting.

After much experience with it and other apparatus for this work, I unhesitatingly state that it is the only successful method at present before the profession. I do not mean to infer that plates cannot be cast by any other process, but it has been my experience to find that with other methods there is an average of at least one failure in ten—this, too, in the hands of an expert. With the Zeller, a man of ordinary skill can depend upon a perfect plate always.

In a successful method for casting aluminum, much is dependent upon the metal, and the Zeller alloy meets every requirement. The cast will be found clean and smooth enough to be placed in the mouth without polishing, if preferred so, as will be found in the cast made at this demonstration.

The shrinkage in the Zeller alloy is extremely small, permit-

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* Remarks at Michigan State Dental Society, 1894.

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ting the operator to cast to plain teeth without fear of a check or imperfection.

The tendency of pure aluminum to crystallize, which results in a very rough plate, is entirely overcome in this metal.

The metal is totally free from chemical action in the mouth. This has been proven by four years wear, and also by tests made in various solutions out of the mouth. Plates have been immersed for a period of seventy-two hours in the following solutions:

One teaspoonful of salt to one pint of water.
One tablespoonful of salt to one pint of water.
Equal parts of acetic acid and water.
Full strength of acetic acid and water.

There was absolutely no sign of chemical action and the solutions failed to give a test for aluminum by addition of the proper re-agents.

Mitchell's Dental Chemistry states: "Aluminum is soluble in hydrochloric acid and aqueous solutions of alkaline hydrates and resists cold acids, mineral and vegetable, except hydrochloric;" and my own experiments confirm this.

Plastic amalgam cannot be worked in contact with cast aluminum, particularly in an alkaline saliva, as the mercury combines with it superficially, and this in turn, when exposed to the air, takes up oxygen and forms alumina, which appears on the surface as a white excrescence. Fillings of amalgam which have crystallized or hardened have no effect on cast aluminum, and a cast plate or bridge may be placed in contact with them with perfect safety.

To give a better understanding of this method I will describe it briefly from the taking of an impression to the finished plate, and this as I proceed in the casting of the case before you.

The impression (which I always prefer in plaster) should be as smooth and perfect as possible. I scrape it slightly from just behind the center of the alveolar ridge to within a quarter of an inch of the posterior margin of the plate (the same as for other plate work). I now paint it with a thin solution of shellac varnish and set aside for at least thirty minutes (this to allow it to set perfectly). I now coat the surface of the impression, except on the buccal surface of the alveolar ridge posterior to the cuspids, with a thin solution of sandarach varnish.

I have found by actual measurement that the shrinkage across the heel of a plate amounts to about $\frac{1}{126}$ of an inch, and this is enough to make the plate fit snugly, and, if increased, would prevent the plate from coming in contact with the hard palate and thus interfere with the suction. I have found that the two coats of sandarach, if the impression is covered on the buccal sides mentioned, amounts in thickness to more than the shrinkage of the metal, and for this reason is objectionable, as it makes the plate too narrow across the heel, bringing all the pressure on the buccal surface of the alveolar ridge and preventing contact in the region of the hard palate.

After coating with sandarach as described, I allow it to stand again for at least thirty minutes, after which time I dip a camel-hair brush in dry pulverized soapstone and rub over the surface of the impression; then I run my model (using for this ground asbestos and plaster of paris) and set aside for about two hours.

In cases where there is no undercut, it will be found that by careful tapping on the bottom of the impression they will separate without destroying either the impression or model, and the surface of the latter will be found smooth and polished, much the same as polished marble. If there are any undercuts, I break away the buccal or labial portion of the impression and then separate.

The above in detail is the best method I have found for making a perfectly smooth model, which is so essential in cast aluminum work.

I next wax up the case as desired, using wax about the thickness of the ordinary pink rubber, or thinner, which can be obtained at the dental depots.

The case is now invested in a Zeller flask. This differs from all others used for this purpose, in that the crucible is cast to it; also, that it has on each side of the crucible two air-escape holes which communicate with the interior of the mold by means of circular and lateral canals. In these holes is placed a piece of fine wire gauze which permits the escape of the air, but checks the metal so that it can be cast under pressure.

The case, being flasked, is now placed in the apparatus and dried out slowly, which usually takes about one hour. This brings me to a very important point in cast aluminum work.

You will notice that the apparatus is constructed with two burners, each of which is furnished with an air tube for connection with the blower. The interior of the lower burner is the same shape as the exterior of the flask, except that it is a little larger, just enough to allow the flame to reach it at the point where combustion is most complete. By this means the flask is surrounded by a uniform heat, which may be regulated as desired, and will permit the operator to make it, with contents, white hot in five minutes by means of the blast. This is one of the most essential points in cast aluminum work and one that is overlooked in other apparatus.

As soon as the flask is perfectly dry I connect the blower with the lower burner and continue with the blast until the flask and contents are a bright red heat. I maintain this for a period of at least five minutes ; this latter is absolutely necessary, as the contents of flask (asbestos) is so poor a conductor and requires time to absorb the heat so hecessary to a perfect cast.

Being satisfied that the mold has acquired this heat I now turn off the gas from the lower burner for a period of five minutes (exactly). I now drop an ingot of metal in the crucible and turn on the gas in the upper burner, which you will notice is round and adapted to the circumference of the crucible, the same as the flask burner and for the same purpose. When the above-mentioned time—five minutes—has elapsed, I ignite lower burner with low flame, and without blast (this is simply to hold flask and contents at this temperature, and experience has demonstrated it to work best at this heat) and proceed to fuse the aluminum by means of the blast being directed around the crucible. I never allow the crucible to become white hot, as there is great danger of burning the metal which would result in a spongy plate. The metal is watched closely, and as soon as it is noticed to be completely fused I insert the two brass tubes, as shown, into the air-escape holes at side of the crucible, giving them about ten seconds to absorb heat and expand to fit air-tight in the holes.

I now make my cast by creating a vacuum within the mold. This I find is done best by taking *one* long and strong inhalation with the lungs. You will notice as the air is taken out of the mold, atmospheric pressure forces the metal in, and a perfect cast is the result. I now place the cap on top of crucible and submit to pressure from the lungs, merely to make a more dense and smoother cast. It is now set aside to cool, after which it is trimmed and filed to fit the mouth.

Many prefer to place the plate as cast in the mouth. In my practice I burnish, and this is best done with a gold-finishing bur, one about the size of a pea, in the dental engine. If the plate should be cast rough in spots, I grind smooth with a small corundum wheel, and then burnish as before mentioned, always using oil for this purpose. I now finish with brush wheels and wet pulverized pumice stone and finally with a dry wheel or dry felt cone—the brush making a bluish finish, the cone a white.

I have little to say of the merits of cast aluminum work, as the sample cases I present for your inspection are sufficient testimony.

The exceedingly slight shrinkage of the Zeller alloy makes a plate which is unsurpassed for adaptation and perfect suction, as will be best understood by the following which I quote from Essig's work on metallurgy:

"Plaster expands on setting. From the impression to the model, two expansions are gone through before the fac-simile of the mouth in plaster is obtained; hence a plate made to fit such a model perfectly must necessarily be somewhat larger than the mouth—a condition unfavorable to atmospheric adhesion; better results might be expected where the plate is somewhat smaller than the mouth, because such a condition would, in entire upper dentures, throw any under-pressure upon the alveolar ridge, while that portion of the plate covering the palatine arch would barely be in contact with the tissues; the pressures along the ridge would quickly promote absorption of the remains of the alveoli, and a uniform adaptation of the plate to the mouth would soon follow.

"On the contrary, if the plate be made to fit the plaster cast, and is a trifle larger than the mouth, the pressure will be thrown upon the palatine arch at the back edge of the plate at a region not likely to change by absorption, as is the case with the alveolar ridge, and hence the margin of the plate will imbed itself in the tissues and cause much discomfort and impair the usefulenss of the denture."

In attaching teeth by rubber before flasking to vulcanize, I paint the plate with sandarach varnish, except where the rubber is attached; this prevents any discoloration which would occur if unprotected.

PRACTICAL HINTS.

BY C. J. HAND, D.D.S., ROMEO, MICH.

Have never heard of the Bonwill crowns being used as follows, but in my hands they have proven very satisfactory indeed.

Cut down the root as for a Logan, or any crown of like description, being careful to have the buccal portion below the gum margin. Grind crown to good fit. Take iridio-platinum wire and flow pure gold over it and cement into root with gutta-percha for the lower half, being careful to place crown in proper position while setting the pin, in order that no strain be brought upon it when setting crown. With Downie's preparation of gold coat the whole inside of the crown, and in one of his furnaces bake it. This gives a gold coating. To set the crown, I use a quick-setting white alloy, building around pin in the root, and covering the whole root and pin. Force the crown into place, having the patient bite to be sure of occlusion, and finish up. The alloy will adhere to the gold of the pin and lining in crown and make a solid pin.

The use of copper points, made from wire, such as is used for electric bells, etc. Fill the apex of root with chloro-percha. Moisten small gutta-percha point in chloroform and press down. Heat the copper point and drive home. If the proper length is first taken and the larger end flattened slightly, you have a support for your alloy, which will adhere perfectly to the copper, that can not be excelled. I have used these points for over three years and am more in love with them each time they are employed. Employing the gutta-percha point first prevents any discoloration of tooth.

INJECTIONS FOR PAINLESS EXTRACTION.*

BY CHAS. BUFFETT, D.D.S., CLEVELAND, O.

The painless extraction of teeth is something desired by all dentists as well as by all patients, and since the discovery of the anesthetic properties of cocaine about ten years ago, it has been used hypodermically more or less by dentists for the purpose.

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*Read before the Northern Ohio Dental Society, 1894.

Complete anesthesia is but seldom attained, as there is generally some slight pain attending the extraction after its use, but occasionally a patient will say there was no pain whatever.

The muriate of cocaine is used, the strength of the solution varying from two to ten per cent, the stronger solutions requiring less minims to produce the desired effect. To produce more perfect anesthesia and to counteract any toxic effects of the cocaine and also to preserve it, various drugs have been combined with it, among which are the following: chloral, atropin, ether, oil of cloves, antypyrin, menthol, stropanthin, carbolic acid, and I suppose many others, as there are many secret compounds in the market, each of which is superior to all others, and each is perfectly safe, produces complete anesthesia and no ill effects ever follow its use. I have used cocaine for several years in a four per cent solution, without any additional drug and have had but few cases showing any toxic symptoms and none of them serious.

In preparing for the extraction of a single tooth, I usually make two or three injections, if three, two on the buccal surface and one on the lingual, not far from the margin of the gums, avoiding as far as may be the more vascular tissues so as to have as little of the cocaine as possible enter into the general circulation. From six too ten minims is sufficient for a single tooth, the quantity depending somewhat on the amount of inflammation in the surrounding tissues. After the injection of a small amount, if there is no whitening of the gums, I usually withdraw the needle and insert it in another place.

It is best to wait five or six minutes after the injection before extracting and then there will usually be but slight pain. In acute periostitis there will generally be quite severe pain, but not near as much as if no cocaine were used. In cases of abscess the result is uncertain, sometimes but little pain is felt, at other times there is considerable. Loose roots about which there is much soreness may frequently be extracted without any pain, the cocaine being injected in the sockets of the roots as well as into the adjacent parts. If several teeth are to be extracted, I seldom prepare more than two at first, and extract them before injecting the cocaine around any of the others. Patients will sometimes experience some unpleasant effects of the cocaine, complaining of nausea, dizziness, or of faintness, but upon inquiry I usually find they are subject to these symptoms on slight occasions, and I have had none occur that any but the simplest remedies, tilting the chair back and have them inhale spirits of ammonia is usually all that is required. I have nitrite of amyl at hand but have had no occasion to use it for years. Before inserting the needle I apply a ten per ceut solution of cocaine with two per cent of carbolic acid to lessen the pain and by so doing the patient will have more confidence and less fear than when the insertion of the needle is painful. If the patient is nervous and manifests fear, the dentist should try to dissipate it and on no account show any fear or anxiety himself. I have lately been using the following formula:

Muriate of cocain . . .	gr. xx
Sulphate of atropin . . .	“ $\frac{1}{3}$
Glycerine	m x
Aqua dest.	℥ i

Of this formula I never use more than 15 minims at one sitting and if it is necessary to use more cocaine I use that whica has no atropin in, as the 15 minims contains as much atropin as is best to use at one time. The glycerine will preserve the solution a long time, although there is but a little over two per cent in it. I cannot say from experience whether the addition of the atropin will be an improvement or not, having used it but a short time and it will require months of trial to determine, but I believe it will be an improvement. In regard to the secret preparations that are thrown on the market and almost in our faces by circulars, I have never tried them. Several deaths have occurred from the use of cocaine and too much care cannot be taken in using it hypodermically.

Patients will sometimes have unpleasant effects caused by fear instead of the cocaine.

Dr. E. C. River, of Denver, Col., reported the case of a patient where six drops of a four per cent solution had been injected into each eye. After the operation the patient complained of nausea and a feeling of faintness, the face became pale, the hands cold and the skin covered with cold perspiration, pulse 48. All of these symptoms passed off in a few minutes. The next day cocaine was used as before without unpleasant effects. The patient said the distress previously experienced was due to the knowledge that he was being cut, though he had no pain. He had fainted on a former occasion while witnessing an operation.

A physician in Cleveland related to me his experience in first using cocaine for extracting teeth. He was stopping in an office with another physician and one of the latter's patients came to have a tooth extracted, and as he had seen the other physician use cocaine he injected some into the gum and the patient at once went into spasms, and the symptoms were such as to frighten the doctor, but the lady soon recovered and he made arrangements for her to come the next day when the other physician would be present.

On informing the physician of his experience, he was told that the cocaine had nothing to do with the symptoms manifested and he would prove it to him the next day. When the lady came instead of cocaine, water was used and the same symptoms were manifested, but the tooth was extracted. These cases show the necessity of allaying the fears of the patients as much as possible.

NEW THINGS IN DENTISTRY.*

BY J. R. BELL, D.D.S., CLEVELAND, O.

In my experience, oftentimes, the things I present as new are old and thread-bare to others and vice versa; therefore, I have grown indifferent unintentionally about offering things new whether they originated in my own or some one else's brain.

The use of magnesium hydrate, while not new, is worthy of mention.

For a local preparation in cases of erosion, decalcification of enamel at the cervical border, or where the secretions are acid, as in cases occasionally of gestation or lactation, is useful, bridging over, as it were, a period until physiological changes take place. Cases of young misses and men are numerous where an antacid is indicated. Its taste being pleasant without danger of injurious effects should place it on the front shelf as a valuable remedy to prescribe. It succeeds lime water, bicarbonate of soda and precipitated chalk. A teaspoonful taken into the mouth at bed-time and rinsed around until it comes in contact with the teeth forms an anticid coating, which adheres sufficiently to protect them for several hours. In extreme cases I prescribe its use three times daily, after meals. It is known as Phillip's Milk of Magnesia.

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*Remarks at Northern Ohio Dental Society, 1894.

Pyrozone.—Allow me to add a word of caution regarding the 25 per cent. pyrozone solution; it cauterizes and therefore should be employed with care.

It may not be out of place to mention here that liquid alboline is an antidote for pyrozone "burn," and moreover I will say pyrozone should be used in a glass atomizer. I feel sure that this remedy would be all we could wish in cases of pyorrhea, were we able to prescribe positively for the cause, which is undoubtedly systemic.

Pyorrhea Alveolaris.—Not a little credit is due Dr. Peirce for his untiring efforts in prognosing this disease. We shall hope that ere a long prophylactic may be discovered whereby we can safely say a cure and a permanent cure may be established. To him a monument that shall stand for everlasting and everlasting will be the result.

Dental Teaching.—Mention has been made of the progress in the revised system of teaching in dental colleges. The same credit is due many medical colleges, especially in respect to their establishing a chair on dental surgery, a knowledge of which is recognized as of not a little importance. It brings our specialty into closer relationship with the medical practitioner.

Sulphuric Acid.—A word in regard to the use of sulphuric acid for the removal of debris from the tooth root canals, "as per Callahan's method," may not be amiss here. The tooth in which it is to be used should be exposed through the rubber-dam and coated with hot wax as a protection against the action of the acid, and a thorough application of an alkaline solution employed immediately thereafter.

R. S. Williams' Crystalloid Gold is, I think, worthy of mention, as a great acquisition to those of us who wish to operate rapidly. This gold spreads towards the walls of the cavity thus enabling the operator to more easily start fillings in shallow cavities. If sufficient gold is used to cover the floor of the cavity and the force is applied down, it will be found to wedge at once. It spreads best without annealing, but for surfaces and contouring anneal to a red heat.

AMERICAN DENTAL ASSOCIATION.

Reported for OHIO DENTAL JOURNAL by Mrs, J. M. Walker.

[*Continued from page* 473.]

SECTION 2.—"DENTAL EDUCATION, LITERATURE AND NOMENCLATURE," was next called. Dr. L. OTTOFY, chairman.

DR. OTTOFY reported first on the number of dental colleges. At the time of the last report from this section in 1892, there were thirty-nine. This number has been augmented to forty-six in two years, two of which, however, have been discontinued, leaving forty-four dental colleges in actual operation. Two thousand eight hundred students have matriculated, of whom two thousand six hundred have been in attendance and six hundred have graduated.

The National Association of Dental Faculties has been the source of marked development and advancement in the standard of the colleges, and but one dental college, as far as known, now continues the traffic in dental diplomas. Necessarily all do not have the best possible equipment or the best of teachers, but all recognize that they cannot attain to prominence or maintain their standing unless they enforce the rules laid down by the National Association of Dental Faculties. Credentials from foreign schools are scrutinized with the utmost caution and the rule is enforced that foreign students must acquire our language.

The subject of dental education was exhaustively treated at the Columbian Dental Congress and at the Twenty-first International Congress in Rome, and many points were raised that are worthy of investigation.

In handling the large number of students in some of the colleges by sections and sub-sections, it is impossible that full justice should be done to each and every individual. In the extracting rooms a student has perhaps but one or two days' actual practice. The subject of either limiting the classes or enlarging facilities is one of great importance. A student may well ask if it was the right thing to admit him when it was not possible to furnish him with clinical material. It has been suggested that students be given the privilege of practical work under the tutelage of competent practitioners, but this is not always feasible. The custom of changing from one school to another, during a student's course, is to be condemned, as schedules are not uniform and some points may be lost entirely. It is best to select a good school to begin with and to finish there. As to the question of undergraduates being permitted to practice between sessions, this is an evil that is hard to contend with and that is not within the control of the colleges, but the schools should exert a wholesome influence in this direction. The schools should demand that a student, before matriculating, sign the code of ethics; this would exert a great restraining influence. It would be well if every student, before matriculating, should have to sign a statement that he had not been practicing in violation of the code of ethics for two years before matriculation; that he had not been engaged in any office so conducted, and had not had any interest, financial or otherwise, in any office, institution, or practice of that nature, and that he had not violated the dental law of any State during that period, and, *secondly*, that he agrees from the day of matriculation to the day of graduation to govern his conduct by the code of dental ethics, to obey the dental laws of his State and not to engage in unlawful practice, and that any violation of this contract would entitle the college to remove his name from its records and to so report to other colleges, and *thirdly*, that a diploma shall be held only during good behavior; that the college have the right to cancel it for any unethical professional conduct. All this to be signed in due legal form. Such a contract as this would draw a much better element to our colleges and would exert a most wholesome influence on the whole dental fabric.

The report considers this a most propitious time to introduce improvements and reforms tending to elevate professional standing. The first vital demand is a change in the qualifications for admission to a dental school. To allow each school to be the judge of the individual fitness of the candidate is a faulty method. The lowest requisite should be the degree of Bachelor of Arts or its equivalent obtained from a reputable university. The school term should also be extended to nine months each, for four years.

The national organization of the teachers of technics is a very important step. This feature, introduced by Dr. G. V. Black, is most important in the education of the dental student.

The system of post-graduate instruction has proved very beneficial in improving the older practitioners who had not the advantages of college education and in improving graduates in special branches. It is greatly to be regretted that the adoption of a uniform system of dental nomenclature did not result, as was hoped for, from the World's Columbian Dental Congress. A better means of popular education is an imperative demand. This should be parcelled out in small doses, by means of slips adapted to the case in hand, giving just the information needed, but not trying to teach it all at once. The section had hoped to submit reports from many local societies, and as a sample of what was desired, submitted a report from the Washington City Dental Society as a model.

In the discussion of the topics introduced in this report—

Dr. Frank Abbott thought that the proper place for reform, in the time devoted to dental education, was at the beginning rather than at the end of the term. He was in favor of raising the requirements for admission to the school rather than extending the time for technical study.

Dr. St. George Elliot said that in education *per se*, England was decidedly ahead, though in technical skill the American dentist was far ahead. He thought Dr. Abbott had hit the nail on the head in what he had said as to the necessity of more thorough preliminary education and a higher standard of admission to the technical schools.

Dr. W. A. Morgan said that success in the practice of dental surgery depends largely upon technical skill. You may give a man all the collateral science you choose, but without technical skill he will not be a competent dentist.

Dr. Frank Abbott: The fact of a thorough preliminary education does not preclude the possession of practical skill. The better a man is educated the better professional man he will make.

Dr. Bogue called attention to the fact that in Austria a man had to complete a seven years' course in medicine before he could take up dentistry, and for that reason there were no good dentists in Austria. A man needs to acquire his technical skill while he is acquiring his theoretical education.

In Italy no man can study medicine till he has graduated in literature, and he cannot study dentistry till he has graduated in medicine. He must take the degree of A.B. before he can get the M.D., and he must take the M.D. before he can get the D.D.S. Time is not counted in the old countries and a man would be forty years old before he was prepared to do anything in dentistry, but here every moment counts. A young man begins at eighteen and in three years he expects to begin to do something for himself. He cannot wait till he is thirty or forty years old before he begins to serve his fellow men. At eighteen or twenty he is prepared to enter a professional college and at twenty-one, two or three he is ready to earn his living and to render good service in his chosen profession.

Dr. J. N. Crouse: In regard to practicing before graduating, I think every man should be given a chance to find out what he is fitted for as early as possible, and if he is not fit for it let him find it out early and try something else. A man does not want to spend three or four years in learning something he is not adapted to. The college faculties know that many of their students will never make dentists. Then let them try and find it out, so that they can quit in time and go at something else.

Dr. J. Taft: That would perhaps be an advantage to the undergraduate and not hurt him, but how about his patients? It takes but a few years to complete the curriculum and before it is completed he is deficient in many lines, especially when a graded course is followed. A man should be as thoroughly equipped as possible before he is allowed to practice at all. He has the opportunity in a well regulated college to test his abilities under competent supervision and direction. It is wrong to encourage the idea of an undergraduate starting out alone. He may attain a moderate degree of success—some people are easily satisfied—and then the chances are that he will never complete his course, but will spend the rest of his time making money and believing that he is doing as well as others. A properly planned course should be followed to the end. Those in charge should do their best to give him the best possible equipment before they sanction his going out to practice. The influence of the contrary practice is prejudicial to the profession.

Dr. Morgan: I admit that the broader and more thorough is man's education—all things being equal—the better qualified he is to serve those under his charge. But after all, manipulative ability is the keystone in the arch of dentistry. We cannot do without that. One point in the paper I must refer to—the idea that a young man who, by some mishap through lack of advantages or of proper information, has been led into quackish practice, must never be admitted to a dental college. According to my faith there is no sin that cannot be pardoned through repentance and reformation. If the young man finds out his mistake, if he proposes to rectify the error of his ways, we should take him by the hand, encourage him, lift him up out of the slough of despond. Many of our best men picked up their first ideas in the shop of some "Cheap John." I do not understand what is meant by the phrase *thoroughly qualified.* A man would never begin to practice if he had to wait till he knew it all first. The schools, through their laboratories and clinics, teach all who have any practical ability what they have to do in a successful practice. If not, they fall short of their duty.

Dr. Truman favors preliminary education that enables a man to profit by the teachings in the professional schools, but would not have a man devote all the best years of his life to it. After a certain age he cannot acquire the manipulative ability necessary to make him a good practical dentist. We do not want the standard of Europe in America.

Dr. F. Abbott followed in the same line of thought with Drs. Morgan and Truman. A dentist if not practical is good for nothing. A minister is good for nothing if he cannot preach. A lawyer is good for nothing if he cannot make a speech. A physician is good for nothing if he cannot, once in a while, cure a patient, and so with a dentist, he is good for nothing if he cannot use his hands. In the old countries the system of education is such that a man is old before he begins his professional life, and so it is that in Germany, France, Italy, Austria, their dentists lack that genius of manipulation that the American dentist is endowed with.

Dr. Bogue: The reason for this is that in a republic every man is as good as the best if not a little better; but in Europe a man who labors with his hands is degraded by it. Dr. Bogue said that his own preceptor taught him first of all how to use his fingers and he honored his memory; he was taught in the little material details of every day work. Manual and intellectual training must go hand in hand.

Dr. Taft: Any man belonging to a profession should be fitted to occupy a respectable place in the intellectual world. More than half of the men who ten years ago were known as good practical dentists were deficient in a knowledge of their native tongue. I know, from my correspondence, that they could not write a respectable page, not a composition on theory or science, but a simple English letter of a dozen lines. I have been made to blush for the ignorance of men who were practicing dentistry; there is no excuse for this. A respectable common school, or even grammar school educatian can easily be attained before the age of sixteen or seventeen. Young men are coming out now by the thousands at the age of sixteen, with a good degree of attainment. It is within the reach of all and *it should be required.* Because a few have not had these advantages they should not be permitted to weigh down the whole profession. I speak of a reasonable basis of elementary education. I do not include Latin and Greek and the higher mathematics, though the few men who have had these advantages stand head and shoulders above those who have been less favored. The young man who has been trained in mathematics and the languages is the better prepared to understand the special studies of our own curriculum. A knowledge of the languages from which our own has been built enables us better to understand our own in all that pertains to it. It is not simply a matter of dogged memory, it is a knowledge of the principles underlying its structure. Knowledge of this kind will not, cannot interfere with a man's technical abilities. But if he follows the plow till he is thirty or forty years old he will never acquire the technical ability required in dentistry. But all have not the same natural skill in finger-craft; some, whether educated or ignorant, take it up rapidly, some are naturally slow and some are quick. Manipulative ability does not depend upon education.

Dr. Jno. S. Marshall: I agree in the main with what Dr. Taft has said, but I go a step farther, a long step farther. It stirs up a feeling of indignation to hear gentlemen on this floor—gentlemen who are members of college faculties—decrying a liberal education as disqualifying men as students of dental science. It seems to me if we would have dentistry on an equal standing with other liberal professions it must be on the basis of scientific attainments. Who are the men who write the textbooks we give our students? They are the men who have gone through college, who have then studied medicine, and have then studied dentistry—they are the men who write our text-books! Dr. Taft knows very well that many men who are "good dentists" write papers that have to be very much *fixed up* to fit them for publication. If they had had a liberal education that would not be so, and they would be none the less *good dentists.* It has been said that the colleges should devote more time to practice and less to theory! But the only place to get any theory is in college. A man will not study theory when he gets out of college and gets into practice if he has not studied it in college; but the best practice is that which has theory and science underlying it.

Dr. Truman: My observation does not agree with that of Dr. Taft, that the average dentist is an ignorant man. It is perhaps true of Michigan, but it is not true of the eastern States. I am daily brought in contact with written papers, written for publication, and I do not find in them any proof of that excessive ignorance spoken of. I find that they compare very favorably with papers written by medical men.

Dr. Taft: I did not say that the average dentist *of to-day* was an ignoramus. I spoke of the average dentist of ten years ago. Improvements are being made all the time, and Dr. Truman is helping to remedy the defects. I admit that there is a large amount of knowledge in the East, but we are trying to get a little in the West also, and I hope that in the course of the next century we will get up with the East!

Dr. Kulp: I have always advocated a higher order of education as essential to the advancement of the profession of dentistry. We must educate in manipulative skill while we are piling it on the brain.

Dr. T. T. Moore: Not one-third of the men who get through our dental colleges are competent to practice dentistry. It is not the fault of the colleges. With so many colleges there are not enough students of the right stamp to go round. A practical solution of the question would be to have our dental colleges endowed institutions, with good salaries for the professors. Then if they found a student not competent to make a practical dentist, they could dismiss him at once. It is not right to keep a man three years studying for something for which he is entirely unfit. As soon as this is ascertained he should be told so and advised to try something else.

Dr. H. J. McKellops: I was one of the unfortunate ones who had no early advantages. I had to earn the money with which I got my education. I began at the very bottom of the ladder, but I made my own way and I made my mark in the medical college; my specimens are even now to be found in the dissecting room of that college. But how many medical men look for the source of disease in the mouth? How often does the oculist look to see if a diseased tooth is not the cause of the eye trouble? Men have paid five hundred dollars for treatment of ear trouble when it all came from bad teeth. A dentist should be taught fine manipulative work first. Let them start at the foundation. Do not make plasterers and daubers of them, but teach them nice little work at first and they will never forget it.

Dr. B. H. Catching wished to say a word about the negro in dentistry. There is a negro college in Nashville which is sending out negro graduates in dentistry. When they come before the State Boards for license, they show themselves thoroughly up in theory and in the literature of the profession. They pass fine written examinations, but their manipulative powers are defective. One feature not yet alluded to in this discussion is the present elevated social position of the dentist. A few years ago the dentist occupied about the same position socially as the chiropodist, which was due to his general lack of higher education. His present elevated status is due to the liberal education required as a professional man.

Subject passed.

(To be continued.)

SOUTHERN DENTAL ASSOCIATION.

Reported for the Ohio Dental Journal by Mrs. J. M. Walker.

Continued from page 463.

Dr. I. N. Carr, Tarboro, N. C., read a paper on

DENTAL EDUCATION.

He emphasized the necessity for thorough preliminary education for the dental student, superior qualifications being now demanded in every department of human industry. Excellence is the only warrant of success. The dentist of to-day must have a good college education, mechanical ingenuity, and varied and substantial accomplishments for his social needs. The dental colleges have all the advantages and facilities for teaching the advanced branches necessary in professional education, but they have too many students to allow them to teach the elementary, fundamental branches. They cannot teach anatomy perfectly, for with two hundred students in the class, only those well up in front can see what is being demonstrated. In the dissecting room he must learn what he can, practically unaided.

In this busy age reading with a preceptor is time lost; the able practitioner is too busy to, or he is rusty on some branches, and he can furnish no dissecting material. A thorough course in a good preparatory school is of inestimable benefit to the dental student. Dr. Carr places a high estimate on the value of proper reading, selecting only the works of the best authors. Books create a social world for us; in them we find congenial fellowship; they feed the mind and by them we grow into larger stature, they add the senses of others to our own and we gain a clearer eyesight, a keener touch, acuter hearing. Life is multiplied by them. They open the highways of thought along which we are borne on distant journeys. They respond to our aspirations more heartily than our truest friends. They interpret our thoughts and make clear the dim conceptions of our own minds, perfect our hesitancy and relieve our doubts.

We should read not only to get information, but to go a step higher and become thinkers.

Among the requirements of the successful, cultured dentists Dr. Carr enumerates good manners, unaffected politeness to all, kind and gentle yet firm behavior with patients, placing himself in perfect harmony with his surroundings.

In regard to the dentists in instructing the general public Dr. Carr suggests that the state societies, or better still, the Southern Dental Association issue a suitable pamphlet, and that a publishing fund be created for this purpose.

Able papers on Dental Legislation were read by Drs. H. B. Noble and A. W. Sweeney, of Washington, D. C. Both papers were in the line of condemnation of the state laws which require the re-examination of college graduates—laws that in the view of Dr. Noble "seem to be a slur on college and university work." If necessary to supervise the work of the colleges, it should be done by proper delegated authority, so that a diploma shall represent truly such a course of training and knowledge of dentistry as shall entitle its holder to practice, without further examination, in any location he may select—subject always to the laws of malpractice. A dishonest or dishonorable lawyer can be disbarred from the practice of law, so, also, the dental laws should be so framed as to debar from the practice of dentistry the man who is unworthy or incompetent. The dental law of Connecticut is nearer the mark in that respect than any other state law as far as known. Under certain conditions the State Examing Board can cancel the certificate conferring the right to practice.

The laws should be so framed as to reach the advertising quack rather than to turn down some boy-graduate not quite up in book-examinations, or to catch some old graduate who is getting rusty on anatomy and chemistry. Examining boards should handle the student before he gets his diploma, so that the diploma would represent both the board and the college. If they believed that the colleges were not educating their students up to the proper standpoint, then committees should be appointed to investigate and report the colleges that are not up to the mark.

Every college should have a representative in the examining board of its state, to serve as a friendly connecting link, promoting harmony and mutual interest between the boards and the colleges. Dr. Noble suggested that committees be appointed from the Southern and the American Associations to act and confer with the National Board of Faculties and the National Board of Dental Examiners, and recommend such changes as will tend to harmonize the dental laws and promote dental education.

Dr. Sweeney's paper also dealt with needed reforms in dental legislation. Dr. Sweeney can not find in all that has been said on the subject "one particle of argument to sustain the position of those who try to maintain that no college degree or state certificate shall be accepted in lieu of examination, and that even though re-examined in one state in order to practice, it must be done *over again* in another, if the individual should see fit to move." He is not opposed to dental laws, provided they are designed to accomplish only proper results. He hopes to see laws which will not "wink at" the prosperous and arrogant quack while they are made to seize upon and terrify the young and struggling graduate who has just parted with his scanty hoard in the effort to learn how to earn an honest living, and are held up as a menace to the practitioner from another state or country, whose ability may be great and his intentions most honorable—laws which, if they can not be made "retroactive," can be made more clearly to define what constitutes malpractice in dentistry, and impose some wholesome restriction upon the reckless abuse of anesthetics, which is inflicting incalculable injury, pandering to false sentiment, preventing men from seeking competent dental service and perpetuating the ignorant idea of the past generation, that the dentist is merely a tooth-puller and a maker of "false teeth."

The lack of judicious provision in our dental laws for the suppression and prevention of practices injurious to the public, constitutes their most conspicuous weakness, while the evidences which they disclose of efforts on the part of their framers to incorporate in them monolistic tendencies, must be justly regarded as their reproach. The "protective system" is unethical, narrow, and utterly indefensible when applied to the regulation of professional practice, and a great part of the adverse criticism noted against the dental laws can be traced to obvious efforts on the part of their framers to embody in them provisions which tend to give to dentists already in practice an advantage over those yet to enter. So long as the most unblushing charlatans are permitted to flourish in all large cities where dental laws are in force, while the law is ever held up as a menace to the graduate about to start in practice, or the competent or well-meaning practitioner from another state, just so long will recruits be furnished to the ranks of those who denounce dental legislation as a delusion, if nothing worse.

Dr. Sweeney cited as precedents the laws of Connecticut and New Mexico, which contain provisions for *working* as well as for granting licences to practice, as contemplating a more practical effort towards the protection of the public than those which simply demand the examination of those commencing practice. A requirement barren of practical results in the direction of protection. Dental laws should be framed to protect the interests, not of the dentists of the state, not of those who frame the law, not of the colleges, but of the people of the state.

Dr. Sweeney closed his essay with the prediction that "before the first sunrise of the coming century, the honesty, the true professional spirit, and the sound common sense of our colleagues, the world over will have swept aside every clumsy and ill-advised measure calculated to retard our healthy growth, and dentistry will stand in the vanguard of the liberal professions, dispensing its blessings with an increased and ever increasing bounty."

Dr. C. N. Peirce being called upon to open the discussion of these papers said that he was compelled to dissent from much in both papers. Why have these laws been enacted? There must have been a reason—some foundation for them—that foundation is found in the multiplicity of dental colleges. With perhaps five professors and ten demonstrators in each college, giving their services without compensation, what is the inference? They must have students and they must hold out special inducements. They say, "come to us and we will give you an education and a degree. You shall get your diploma as soon as possible." But some could not get enough students on those terms and they said virtually, we will give you the diploma without the education, and that is the foundation of our dental laws. Our present dental laws are in the line of progress; gradually they are bringing up to ideal conditions. The schools should be the creators of scholars, not grantors of degrees. In a class of two or three hundred students, it is not possible that all should be equally studious; some are sharp, some get through and really know but little; it can not be avoided; it is the natural result of the conditions. That a student who is not qualified sometimes gets his degree is not to be wondered at; the only wonder is that there are not more! The disposition now is not only to raise the standard of preliminary education but to extend the time of study, and to make the student so proficient that he will not fear to go before any board.

Dr. B. H. Catching said that if it were possible to do away with the examining boards it would be a bad thing for the colleges, for they would lose half their patronage, they go hand in hand. A first class dental graduate has no hesitancy in going before any state board. They need have no fear if they are competent. The examinations of the state boards are on practical lines; as a rule they are fair, easy and practical. Blot out the examining boards and you deprive the colleges of half their patronage.

Dr. R. R. Freeman: The millenium has not yet arrived. There is an unrest, an unsatisfied condition. Men must learn that to do right is the means to prosperity: we must have clean hands and pure hearts. Dr. Freeman thought the method adopted in the legal profession would be good in dentistry. A man shows what he knows before the bar; he is not examined, but if he does not give evidence of all he claims, he is disbarred.

Dr. H. J. McKellops: I have not language to express what I feel. I sprang from nothing. I educated myself. I am proud of my profession, but I am not proud or our colleges or of our laws. We want laws to govern the colleges and make the professors teach the students. There are now forty schools and if a man can't pass the board in one state he goes and passes in another, but a man who has practiced forty years in one state can't go and practice in anoter. It is not a good law. It is not so in the legal profession. I go the world over, and I watch these things carefully. Dr. McKellops then described the existing condition of things in England and the causes leading to the present condition.

Dr. W. C. Barrett explained at length the workings of the University of the State of New York, with its Board of Regents, the methods of the regent examinations, the relations of all educational institutions in the State of New York, including law schools, medical schools and most recently of the dental schools to the university. It is not a teaching institution but a supervisory body, it grants charters and revokes charters. Through its examinations only are students admitted to the higher educational institutions. It established an unvarying standard from which there is no appeal. A student must have attained a certain standing in preliminary education before he can matriculate in any professional school. He cannot matriculate whether in law, in medicine, in divinity or in dentistry without a regent certificate. And when he has graduated he has no diploma; he is not licensed to practice until he has been examined by a board appointed by the Regents. If the report of the board is satisfactory to the Regents then he receives his license. Only within the past year has dentistry been admitted on the same standing as the other profession. Dr. Barrett deems this a long step in advance. Charters are granted only by the Board of Regents, and no medical college can be chartered until it has $500,000 actually raised and deposited as an endowment fund.

Dr. Frank Abbott further elaborated the scheme of the University of the State of New York and the advantages accruing to the dental profession in that state by the alliance of the dental schools with the university. He said, if we lose in students we shall gain in self respect.

Dr. T. B. Welch illustrated the workings of the Board of Regents by the following incident which occurred many years ago: Young man desiring to practice medicine applied for a certificate from the Board of Regents. He was a graduate of a civic course college and was well read in medicine, though he had only been in a medical college four months, and in a medical office six months. He frankly stated these facts to the board, said he, "They took us in hand and said, 'Now boys, we have no written questions; we are not going to put on the screws, but we will have a general conversation. We do not ask you where you got your information, or how long you were in acquiring it, we shall soon find out if you are competent. If so, we will give you a certificate; if not, whether you have studied one year or ten years, you will not get it!'"

Dr. Welch also explained the requirements for permission to practice dentistry in England, and the steps necessary in obtaining a degree from the Medical Council. He said you must go to the hospital and pass two years there just as though you knew absolutely nothing about dentistry.

Dr. McKellops said that England was only acting towards American dentists exactly as one state here does towards another and he did not see why all this howl should be raised about it. There is no little feeling of jealousy in it, in arraying of one state against another state, one college against another college, but simply the desire to see that men are really competent to do what they profess to do. He thought a committee ought to be appointed to visit our own colleges and look into their manner of conducting business.

Dr. W. H. Morgan thought it looked as though there was a good deal of politics mixed up in the Board of Regents' business. He did not see how anything but a corrupt stream could flow from a corrupt fountain, and judging Albany by the reports in the New York newspapers themselves it will be hard to find anything worse for wire-pulling and chicanery.

Dr. J. Y. Crawford thought the discussion had wandered far from the two papers read. Dr. Noble's paper was unique in the solution of the difficulties offered, but it had one weak point.

The presence of a member of a college faculty or a state examining board would vitiate the board and deprive it of its functions; this was the decision of the Supreme Court. He himself had been in his own state examining board, but now that he had been elected to a college faculty he had laid down the other position; he could not serve in a dual capacity. He was disqualified by the action of the Supreme Court.

There is but one rational, just and philosophical solution of this question. We have in each state a board legally qualified to pass upon the reputability of the dental institutions of this country. If it is proved to the satisfaction of the board that they have complied with every requirement, then the diploma of that institution should guarantee to its holder the right to practice dentistry in any state in this country. That should put him in *statu quo* in every state. That is the only solution of this question. An additional feature that is required has been placed on the statute books of one or two of the states, and that is, that when a man is proved guilty of unprofessional conduct he can be deprived of his license. If it is right to disbar a lawyer if he is guilty of falsifying his word or defacing the records, then it is right to revoke the privilege of practicing dentistry if a man is guilty of unprofessional actions. This is the way to put an end to charlatanism.

Dr. Ottofy: It is impossible for Congress to supply the remedy in this case. The states are sovereign and each state must improve its own law. The bad laws that we now have, have been copied one from another beginning with the oldest.

Dr. Edwards spoke in approbation of the Board of Regents of New York and hoped such a board of control would be secured for Illinois.

Dr. Sweeney, in closing the discussion of his essay, said he did not see why it should be deemed impossible to attain such a degree of excellence that a license granted by one board should be recognized by another. All that is necessary is to set the standard high enough.

Dr. Noble, closing the discussion in his paper, said in reply to Dr. Crawford, that all that was necessary to enable college professors to hold places on the state examining boards was to have laws enacted to that effect. He had been on an examining board with a teacher from a college and found him able to supply the board with much valuable information. It should be a matter of pride on the part of the colleges to obtain representation in the boards, to see that their work is up to the standard of excellence of their fellowmen. If such a law is demanded it can be secured. Subject passed.

DR. THOS. P. HINMAN, Atlanta, Ga., read a paper entitled:

AN ORIGINAL METHOD OF PROTECTING THE TIPS OF PORCELAIN TEETH IN BRIDGEWORK, also, A SIMPLE METHOD OF BANDING A LOGAN CROWN.

He said: The most beautiful piece of bridgework is no stronger than the fragile porcelain facing that gives it beauty, how then shall we best protect their frail portions?

In the first place always use "up and down" pins rather than "cross pin teeth." The strain is more equally divided as the pins are in the long axis of the tooth and further apart. To protect them from the strain of mastication, bevel the tooth on the lingual side, from the lowest pin to the cutting edge, to a knife edge, using the corundum stones. Back with 22 k. 29 g. gold, but not bringing the backing over the bevel, cover the backing with base plate wax and invest. Remove the wax and flow solder to restore contour, except on the beveled portion. After the bridge is completed, burnish the remaining portion of the backing not covered with solder to the beveled portion of the facing, thus protecting the porcelain from the strain of mastication by making it on an inclined plane. If the gold is burnished down over the beveled portion before the solder is flowed, the contraction of the metal will break the porcelain.

To band a Logan crown, prepare the tooth as for a Richmond crown. Make a band of 22 k. 29 g. gold extra wide and larger at the opening than at the root end. Remove the band and grind the crown to fit the root approximately. Replace the band and drive the crown home with the band hugging tightly. Remove the band and crown and with corundum stone grind away the band in front leaving it very long in front. Grinding towards the tooth will burnish the band to it; burnishing the longest portion of the band down over the bulbous portion of the tooth at the back makes a perfect joint with no inside disk and no soldering; is strong and durable.

DR. JOHN S. THOMPSON, Chairman of Committee on Prosthetic Dentistry reported on other papers ready from this committee. Dr. Hinman's paper was then opened to discussion.

Dr. H. A. Parr, New York, having been requested to open the discussion, said that he knew nothing about Logan crowns, never having used one, but that there was nothing new in the method described of backing a tooth. The trouble with porcelain teeth backing is due to the unequal distribution of heat in soldering.

Dr. Hinman replied that the only original feature to which he laid claim was that of burnishing the backing to the beveled portion of the porcelain after the piece is soldered.

Dr. W. H. Morgan said it was certainly a new idea to him that gold could be brought into perfect contact with the tooth and stay there. His experience was that it would always spring back.

Dr. Parr: Every time you touch the gold you put more spring in it. When you get it where you want it let it alone. If pure gold is let on loosely and properly invested, the solder will bring it to a close joint and the porcelain will not break unless a very heavy strain is put upon it. We may not make a perfect joint so there will be no leak between metal and porcelain, but we do the best we can.

Dr. W. C. Barrett, Buffalo, N. Y., agreed with Drs. Parr and Morgan, as to the impossibility of burnishing gold to a close joint with porcelain. If, however, it could be demonstrated that this could be done, it would be a great step in advance, and would repay him for coming to this meeting. He would always flow solder to the point of the tooth. He spoke of the great advantages offered to crown and bridgework in saving teeth formerly condemned to the forceps, and in this respect was doing much to elevate prosthetic dentistry above the low level of many years.

Dr. J. P. Dotterer, Charleston, S. C., described a method of restoring a bicuspid in which the buccal portion was entirely gone, the palatine wall standing and the patient unwilling to have this cut off or to wear an "artificial tooth." He banded the lingual portion of the tooth, adjusted a backing to a central incisor face, soldering the sides of the backing to the gold band, and strengthening with solder to form the grinding surface, thus making a hollow crown to accommodate the palatine portion of the natural tooth, the back and grinding surface being all gold, with enough porcelain on the buccal portion for effect.

Dr. H. E. Beach did not think that pure gold merely burnished to the beveled portion of the tooth, as is Dr. Hinman's method, would afford sufficient strength; it is too soft and malleable and requires solder flowed over it to stiffen and strengthen it and protect tho frail edge of porcelain, allowing, however, only a slight line of gold to show at the cutting edge.

Dr. R. R. Freeman gave his method of securing perfect occlusion of molars and bicuspids in bridgework. Get the bite in modeling compound and flow Melotte's fusible metal in this, giving an exact model in which to adjust the work without wearing away the model as when it is made of plaster of Paris.

The occlusion can be swaged between two metallic casts and made very perfect. In heating the fusible metal put a little water in the spoon with the metal, you will thus get a heat of 212° and the metal sets immediately.

A member spoke of the advantages of the English tube teeth in bridgework, they are the least unsightly, requiring no gold tips, and are easily replaced if broken off. He has been using them for several years and the more he uses them the more fully he appreciates them. He regretted there was no blackboard that he might illustrate their use both for bridge-work and as pivot teeth.

Dr. W. G. Browne places a compressed gold cylinder under a backing of very thin platinum, and burnishes only approximately to the surface of the porcelain; when ground to a feather edge the bevel brings it perfectly in contact, and the solder follows the compressed cylinder aud fills in very thoroughly.

Dr. S. B. Cook does not attempt to burnish down, but simply presses it to place with a soft piece of wood, annealing as necessary. He thinks the porcelain breaks because the enameled surface is broken in grinding, and that this is as injurious to a porcelain tooth as to a natural tooth; it is like taking off the dense surface of vulcanized rubber.

Dr. Parr seldom uses a porcelain tooth that he does not grind off some portion of the surface to get a perfect articulation and does not believe that it renders them any more liable to break.

Dr. J. Y. Crawford thinks this tipping and shoeing of porcelain teeth a useless expenditure of time and labor, breaking more teeth than it preserves. We must rely on non-occlusion of the porcelain, making the point of contact on the strong backing reinforced with solder. He backs the palatine surface only, making the gold slightly concave. Covering a backing of 22 k. gold entirely with 22 k. solder, piling on enough to give all the requisite strength, making it as near the size and shape of the natural tooth as possible. Before soldering the gold should be pickled to virgin purity, blackening and discoloration of the gold resulting from charred impurities.

Dr. W. H. Morgan: The idea that cutting the enamel of a porcelain tooth weakens it is exactly the reverse of the fact; the strength of the tooth lies in the body, not in the enamel. In soldering there must be a foundation for the solder to take hold of; instead of burnishing, better fray the surface with a rough file, and give the solder something to take hold of. Attempting to burnish the gold backing to the tooth is like planting your elbow in a feather pillow, it will cock up at the ends. Burnishing the gold hardens that side and makes it contract and draw up.

Dr. Parr: You have to anneal the gold and platinum the same to take the spring out of it. All these little ideas are not *new* ideas. They were known years ago to the old men who laugh at these *new ideas* of the young men.

Dr. Hinman being called upon to close the discussion of his paper, said that he did not regret having read it as it had called forth a discussion from which he had learned "much." He still believes, however, that the gold used in the way he describes does hug the porcelain and makes a close joint, not with the burnisher, but with sand-paper and cuttle-fish finishing.

Dr. Crossland: I thought I burnished the gold close to the tooth, but if all these old and experienced men say it can't be done, I suppose I don't, but it looks like it!

The subject of Prosthetic Dentistry was not reached again until the last session, Monday moring, when

Dr. H. E. Belden, New Orleans, La., read a paper entitled:

ARTICULATORS.

After enumerating the essential features of articulators in general and the advantages and disadvantages of those now in use, he named as the special features of the Belden Articulator, that the bite can be lengthed or shortened while the plates are kept parallel; that it is capable of extension between plates for full cases, or of being brought into close apposition in single cases; that the upper plate slips back and forth to accommodate individual requirements; that the bite moves from one side to the other to correct the patient's bite; that it has a hinge-like motion to try the occlusion of each tooth as it is waxed on; that it allows a complete view of the palatine portion while the plates are closed, thus showing the articulation of the inside cusps, preventing tilting, rocking or fracturing the plate; that there are no small screws or detachable parts to be lost in the debris of the laboratory; finally that it is light and compact, and commends itself to all as a true and reliable articulator.

Dr. Noble, Chairman of Committee on Voluntary Essays, read a paper from Dr. L. G. Noel, Nashville, Tenn., entitled:

TWO USEFUL IDEAS IN PROSTHETIC DENTISTRY.

The first is a combination of gold and vulcanite for bridges. Make and place in position gold shells for the teeth that serve as abutments; bring them away in an impression, from which make a model in sand and plaster. Connect the shells with a long bar of platinum and iridium to give horizontal strength and afford attachment for the rubber. Place moulding composition about the bar and adapt it to the gum while soft, directing the patient to close the teeth upon it for a bite. Adjust suitable vulcanite teeth and finish by usual process. It is often not necessary to take a bite, but simply wax the teeth to the bar and arrange in the teeth for articulation. The rubber can also be cut away so as not to rest on the gums so that it will not be necessary to get an impression or make a model of the gum. There are no crevices for the collection of fluids and food; it offers greater resistance to the strain of mastication than soldered teeth. There are many modifications of this idea possible; two bars can be soldered in and swaged gold grinding faces vulcanized in; fill in with solder, catching some platina pins in solder for attachments; wax on and bite into adjustment. If the teeth for abutments have long crowns and small necks extend the gold shell only to knuckle and thus avoid cutting away the enamel to get straight lines, removing the grinding surface to admit the thickness of gold in articulation. Extend the end of the bar past the shells for posterior teeth. In a case of inserting the the two superior laterals, collars were cemented to the canines connected by a bar across the lingual surface of the centrals, with the laterals backed and soldered to the bar. A bar thus attached can be utilized in cases of regulating.

Dr. Noble also read a paper from Dr. G. N. Johnson, Concord, N. H., entitled:

UNPROFESSIONAL PROSTHETICS.

(Especially the prosthesis of rubber plates.)

Dr. Johnson deplored the relegation of prosthesis among the musty relics of the past, the fashion in dentistry now is all on the line of theory and scientific investigation. Prosthesis was almost entirely ignored at the Columbian Congress while much time was given to hypnotic suggestions. A high toned dentist airily claims that his practice is "chiefly operative," admission of prosthetic work apparently dimming the light of the professional halo. College students are often not able to construct a passably good set of teeth. Examining boards dwell long on the treatment of exposed pulps and septic canals, while the most abject ignorance on the subject of artificial dentures is no barrier to passing the applicant. But there is no branch of dentistry which requires more skill, judgment, scientific information than the adaptation, expression and articulation of a denture. Dr. Johnson then reviewed the symptoms of what is known as "rubber disease," and claims that the true etiology is found in the rough surfaces, knife-like edges, suction ridges, the cess-pools walled in to increase their capacity for filth, known as "air chambers." All the sharp irregular ridges, undercuts, overhanging edges, etc., are carefully preserved and presented to the delicate membranes of the mouth, presenting a surface better fitted for a nutmeg grater or a beefsteak crusher. After a little absorption, a little recession, a slight change of bearing by wearing down of the opposing teeth, and a new resting place has to be found for all these excrescences. Whether prosthetic dentistry is professional or otherwise depends, not on the material used, but on the ethics which govern and the science which directs its use. It is our professional duty to render careful, intelligent and conscientious service in any direction it may be called for.

These papers having encroached upon the time set apart for the annual elections, they were passed without any discussion.

At an early session, in connection with the papers on hygiene, Dr. John A. Daly read a paper entitled:

HYGIENE IN PROSTHETIC DENTISTRY.

He said—The care of the human mouth made dentists the pioneers in the discovery of the importance of the bacterial theory of disease which clothed the profession with new duties and larger responsibilities as sentinels at the gateway of public health. The theory has possibly been pushed too fast, if not too far, but we stand on solid ground when we say that prevention is the greatest function of the healing art. Cleanliness in things physical yields nothing to moral purity in the canons of right life; it is a useful handmaid to preventive science. The structure and functions of the mouth offer serious difficulties in the maintenance of that hygienic status which sanitation demands. If a man could be scolded or flattered into taking proper care of himself, the history of medicine and surgery would have to be written anew from the beginning; there would have to be a new birth of the present dental and medical practitioners.

Dentistry in connection with this subject has many burning questions to solve—many professional sores to salve. In the forefront is the question of vulcanite dentures; twenty years ago we were told that we were in honor and in duty bound to dismiss it utterly and forever, and yet it holds its place to-day because there is nothing to take its place. The evils charged to it are all preventable evils. The vulcanite plate as usually made presents a rough, uneven surface; if most skillfully made it is porous, if unskillfully made porosity is increased in proportion. This spongy structure, if we accept the bacterial theory, is a microbic hive or nursery, providing there is the warmth and moisture necessary for their generation, growth, propagation and nourishment. Again, being porous, it is soon saturated with the fluid secretions of the mouth, charged with organic matter in a state of decomposition which is disgusting and alarming.

A regard for common decency and the ordinary safeguards of health should not tolerate, much less participate in, creating methods leading to such menacing consequences. It has been claimed that these consequences are avoidable by ordinary habits of cleanliness on the part of the wearer, but this is not so. The wearers are not provided with the chemical solvents in which it would be necessary to steep it.

But simpler means are neither undiscoverable nor unattainable. The cheap, durable vulcanite plate can still be retained and kept in hygienic condition by interposing an efficient and suitable metallic lining between the palate and the plate. This is a thin, pliable plate of pure gold, smooth on the palatine surface, and incorporated with the vulcanite with absolute mechanical union.

A sheet of No. 60 gold foil, smooth on one side and with a rough, crystalline surface on the other, is made to fit closely into plaster molds, making a plate of vulcanized rubber on a golden base, so that they cannot be separated by mechanical means, except heat or such chemical disintegration as would destroy the denture itself; a dense, lustrous, pure gold surface, which imparts beauty to the plate—an added element of value. The lingual surface of such a plate has the highest density and is susceptible of an attractive polish. The plate is an accurate copy of the model and is practically perfect. It will occasion no rubber sore mouth, harbors no disease germs or poisonous secretions; decaying accumulations, uncleanliness, unsightliness and malefic odors are reduced to the minimum. This lining is applied in less time than is required to clean the dirt and plaster from an unlined plate. The common vulcanite denture lies under strong suspicions of being an active agent in producing serious attacks of sore throats, neuralgia and indigestion. That they aggravate these disorders is axiomatic, and no physician will permit a patient thus affected to wear an ordinary vulcanite plate until restored to full health and vigor. Gentlemen: we need to look *higher than the tongue* when we diagnose disease or ill health.

The paper was passed without discussion.

(To be continued.)

ALL SORTS.

Phenosalyl in Dentistry.—M. Touvet-Fanton has used this preparation with good results in the treatment of caries of the fourth degree with fistula, pyorrhea alveolaris, etc. He states that it has given results that he has not expected. It is a medicament composed of phenol, salol, menthol, eucalyptol, and thymol. It is used the same as carbolic acid, and while not so caustic, it is a good antiseptic.—*Extract Revue Inter. D'Odontologie.*

Pliers for Liquids.—Dr. Randall Barrett, of Norfolk, Va., notes the readiness with which a little liquid, as alcohol, for instance, may be caught between the beaks of a pair of plugging-pliers, carried to a tooth-surface or cavity, and by simply opening the plier-beaks be deposited as a single drop. He suggests the greater facility with which a larger volume of liquid can be included within suitably half-hollowed or semi-cylindered beaks. The Jamison pliers will serve to demonstrate the suggestion, and it is somewhat surprising to observe the up-hill flow of the liquid as the pliers are opened, for example, upon the coronal surface of an upper molar.—*Dental Cosmos.*

Meurange (G.) on the Use of Preparatory and Prophylactic Measures before Using Chloroform.—The doctor recommends the subcutaneous injections of the following solution as a preparatory and prophylactic measure before administering chloroform:

Neutral sulphate sparteine, (grs, ivss).	0.30
Muriate morphine, (grs. jss).	0.10
Sterilized water, ad	10 ccms.

Inject 1 ccm. of this solution a quarter of an hour before administering the anesthetic.

Out of 106 operations where chloroform was employed with preliminary injection of this cardiac stimulant, not a single disagreeable symptom was observed, however long the subject was under the anesthetic. The period of excitement was suppressed and the absorption of the anesthetic was reduced to a minimum on account of the morphine.—*Translated from La Semaine Medicale.*

Stability of Solution of Perchloride of Mercury.—From experiments carried out by Dr. Burcker, of Paris, on the stability of solutions of perchloride of mercury, it would appear—

(1). That ordinary water, through the elements which it contains, determines the immediate decomposition of perchloride of mercury, and that this decomposition continues under the combined influence of air, light, and the mineral or organic principles contained in the water or brought by the air.

(2). That when decomposition has already begun, it may be arrested, or at any rate, greatly restrained, by protecting the solution from the action of air and light.

(3). That solutions of perchloride of mercury, prepared with pure distilled water, are only in a very slight degree decomposed, even when continuously exposed to the action of air and light.—*Journal British Dental Association.*

An "Elixir of Life."—For a few years past Prof. Vaughan has been engaged in some very important experiments in the State laboratory of hygiene at the University of Michigan. These experiments relate to subjects of very great importance to the public welfare. One purpose is to accomplish the end which at one time it was thought had been reached by Dr. Koch, namely: The preparation of a substance which can be introduced into the body, and which shall antagonize germs of disease, such as consumption. Prof. Vaughan is now able to prepare a substance which there is reason to believe may be similar to the one normally used by the human body in battling with the germs of disease. His experiments are not yet conclusive as to the usefulness of this substance for the cure of disease, but they tend to prove that by its use immunity to the contraction of germ disease is enhanced. The substance consists of the neclei of cells, and since it is probable that the spleen is the organ in the body which takes the most active part in battling with germs of disease, he has given special attention to the preparation of "nuclein" made from the cells of the spleen.—*Columbus Medical Journal.*

How to Induce our Children to Cleanse their Teeth.—In a paper read at the Midwinter Fair Dental Congress, Dr. J. C. McCoy said: The plan had been suggested to him by Dr. G. R. Thomas, of Pasadena. The first thing is to supply the children with the necessary appurtenances—a brush, medium in size and stiffness, a pleasantly-flavored tooth-powder in a wide-mouthed bottle, so that the brush can be dipped into it, a safe and convenient place to keep them, and last but not least, plenty of water, the free use of which he encourages. The child is taught the use of the brush as soon as the temporary teeth erupt, and if the parent is faithful the child will take the care of its teeth into its own hands at four years. To induce his boys to clean their teeth regularly, he offers a reward of one cent for each time, and requires them to clean the teeth three times a day; first, when hands and face are washed on rising in the morning, then after the noon meal, and before retiring, with an additional ten cents at the end of the month if faithful; if neglectful, they forfeit one cent for each time. A sheet of paper is tacked up on the wall divided into thirty spaces, with pencil hanging conveniently, so that the boys can mark each time they clean their teeth. The account is balanced carefully at the end of the month, paid promptly, and the boys do what they please with the money. Dr. McCoy said his experience with this plan had been most encouraging.

Dr. W. F. Lewis, Oakland, has a different method, which is quite as positive and successful as Dr. McCoy's. He lays down the rule that no child shall come to the breakfast table until its teeth are cleaned, and that rule is like the laws of the Medes and Persians. He has found by impressing on the children the necessity of keeping their teeth clean, that when they are grown it has become such a habit that they do not care to do without clean teeth. The habit can be taught to a very young child.—*Extract from Report in Dental Cosmos.*

Patterson (J. D.) on the Matrix in Filling Teeth.—My use of the matrix is quite extensively confined to the plastic fillings, especially to cement. I consider it impossible to insert a good cement filling in any approximal cavity where the filling reaches the gum-line or extends under it, without the matrix.

Some years since I made the assertion before this association that a cement filling, properly inserted, did not fail at the cervical border sooner than at any other point. The assertion was met with a storm of objections; the objectors, however, have, I believe, come to the belief that I stated a fact.

I am now prepared to go farther and say that when a cement filling is covered by the gum at the cervical border it is protected at that point and lasts longer there *than at any other point.* Experience and observation have *abundantly* proved this in my own practice.

Cement fillings, properly manipulated, are not dissolved out by any of the usual or unusual fluids or secretions found in the mouth, but by the mechanical attrition of mastication, the washing of the mouth fluids, the brushing of the tooth-brush, or picking with the tooth-pick. *Ergo*, where cement fillings are protected from these forces, that part protected will be the least liable to waste. The perfection of the filling, however, at these points, which we formerly found so vulnerable, must be insured by the use of the suitable matrix, and can—so far as I know—be secured in no other way. Without the matrix, the filling at these vulnerable points is rarely perfect. It is pushed away while it is crystallizing, by the ligature, by the rubber dam, or by the gum, until anything but a perfect adaptation is present. With the properly adjusted and properly shaped matrix, which protects the cement thoroughly from any pressure of this kind, and insures perfect adaptation under pressure while the cement is hardening and after it is hard, we obtain at these vulnerable points as perfect a condition as at any other point of the filling.—*Extract Western Dental Journal.*

Keyser (N. H.) on a Method of Fusing Gold Fillings in Artificial Teeth.—I first form in the tooth, in the desired position, by means of a suitably shaped diamond point, a shallow cavity of the desired shape. (I here refer to the improved diamond points recently advertised in the *Dental Cosmos*, a copper tool charged with diamond dust. Nos. 1, 6 and 8 I have found particularly useful for this purpose). It is not necessary that this cavity should be at all deep. The main object of the depression is to secure thick and strong edges for the filling. I should say that the one-thirty-second of an inch would be amply sufficient. It is desirable that the edges should be sharp, even, well defined, and smoothly finished. The cavity should not have beveled edges; its walls should be as nearly as possible at right angles to the surface of the tooth. This is essential to a neat, artistic operation. A cavity of this kind can be readily formed in positions where it would be difficult to make one of sufficient depth to receive a gold filling inserted in the usual manner.

The cavity thus formed I line with Downie's enamel, mixed with water to a thin, creamy consistency, working it well to the edges. This enamel fuses at a low heat. I have used it simply because it happened to be handy. I presume that any of the recently introduced glass or porcelain filling materials, fusing at a low heat, would answer as well. While this is still moist, I place in the cavity a block of the S. S. White crystal mat gold, previously moistened with water, so that it may absorb and sink into the enamel. Sufficient gold should in like manner be added to fill the cavity, and to slightly lap over the edges, lightly pressing it into place. The tooth is now placed in a Downie or other like furnace, and gradually the heat is applied and increased until the enamel is thoroughly fused. This can be accomplished without fusing the gold; it is essential, indeed, that the texture of the gold should not be impaired by too high a temperature. It is now allowed to slowly cool. The enamel takes firm hold upon the spongy surface of the crystal gold, uniting it strongly to the porcelain tooth. If the filling is a small one, it is now finished by condensing the gold with flat-surfaced instruments, burnishing, and polishing with sand-paper disks, felt wheels, etc., in the same way that an ordinary gold filling would be polished. If the filling is large, it is better, before condensing, to pack onto the surface of the gold sufficient of crystal gold or foil (I prefer foil) to give the filling the desired contour.—*Extract Dental Cosmos.*

Guilford (S. H.) on Crown- and Bridge-Work.—A Protest against Some of its Abuses.—We know of no better teacher than experience, and many of those who embraced the new method at its most promising period with all the ardor of a first love, are now beginning to realize that discretion is a safer guide than enthusiasm.

If we rightly discern the signs of the times, the immediate future will witness the insertion of fewer bridges, and those that are inserted will be constructed and placed more in accordance with surgical, mechanical, and esthetical principles.

The practice of mounting a large number of crowns upon a few roots or teeth will have to be abandoned as physiologically wrong and at variance with true mechanical principles. Although in a limited number of cases nature has been tolerant of such abuse, in the great majority discomfort, failure and mortification have been the only results. So, too, the plan of securing artificial crowns or bridges in place by building them into cavities in the adjoining teeth, although not generally practiced, will have to be discarded on account of its unscientific character and the certainty of ultimate failure. The extensive grinding and cutting of sound teeth on their four vertical surfaces to receive a telescoping crown as a bridge-support will also have to give way to some better and more comfortable method of treatment.

Such mutilation cannot be right, and more than all it would seem to be unnecessary.

It has been indulged in under the generally accepted belief that a metal encasement must cover the entire crown in order to protect it from future attacks of caries; and while this liability would be present if the shell extended nearly to the gum-line, it would be greatly lessened if the line of termination of the gold crown were about the middle of the tooth, where its diameter is greatest. A half-length shell can be readily and accurately fitted without tooth-dressing, and, according to the writer's experience answers all requirements perfectly.

Another serious matter associated with present-day bridge-work is the difficulty of repair. Between the chances of the fire and the excessive strain in mastication, porcelain facings will break away, and must be restored. Many ingenious plans have been devised for making these restorations in place, but all of them are unsatisfactory. To properly repair a bridge, it must be removed, and this in a fixed bridge involves an inordinate amount of time, trouble, and annoyance. If no other reason existed for the partial or total abandonment of fixed bridges than that of difficulty of repair, it would be self-sufficient.

In considering the shortcomings of past practice, we must remember that the method is still in its infancy, with many of its possibilities as yet undiscovered, and that the impossible of to-day is the accomplished of to-morrow.—*Extract Dental Cosmos.*

Van Woert (F. T.) on Preparing a Saturated Solution of Sodium Peroxid.—The last time I spoke about it was at the union meeting of the First and Second District Societies. There I made the statement that it was necessary to take from three to eight days in making the solution—that is, to get a thoroughly saturated solution, and one that would keep a reasonable time. I do not mean, by taking from three to eight days in making the solution, that it is necessary for you to stand over that bath and at regular intervals add so much of the peroxid; but I mean if you are in the vicinity of the bath that you can add to it gradually. It should never be put in in the lump condition that it comes in in the can. If you drop it in in that condition, you will notice a great agitation on the surface. It will have a dark color, resembling iodin. If the peroxid is put into the water in that way, I have never yet been able to make a solution that would do the work. If it is powdered, and a very small quantity dropped into the water, about what you would take on the point of an ordinary penknife, not oftener than once in a half-hour, you will get a solution in a couple of days; but if it is inconvenient for you to go to the laboratory as often as once in a half-hour, it may take you six to eight or ten days. That is the solution that so far has been successful with me, and with many gentlemen in New York and Brooklyn. I felt that that ought to be thoroughly understood. If it is not thoroughly mixed you will fail as sure as fate, and the peroxid will get the blame.

I have been asked how it is possible to tell that you are getting a saturated solution. You will notice that when the last particles are dropped in, the whole solution will take on a milky appearance, as though you had dropped a little milk into it. It will not stand many additions after that. I would not put in more than one portion of the powder after that.

Dr. Nash: What would be the result?

Dr. Van Woert: I do not know what the chemical result would be; but it spoils the solution. It is used more particularly in the treatment of dead teeth than in any other way. I am using it with the most satisfactory results.

Dr. Evans: At what temperature do you keep that solution?

Dr. Van Woert- I have a peculiar bottle that I keep it in. In making it, I take an ordinary tumbler, half-filled with water, and place it into an ordinary-sized pudding-dish containing ice-water. I keep it in a cool place.

Dr. Osmun: In the treatment of pulpless teeth, I have been using peroxid of sodium, and I have had successful results. I have used it substantially as Dr. Van Woert has mentioned. I wash out the tooth with a three per cent solution of pyrozone. I then use the peroxid of sodium as often as the case demands, and then I use that old reliable agent, carbolic acid, and I seal it up with gutta percha, and I have had some wonderful results.

Dr. F. A. Greene: When you have made the solution in the tumbler, how often do you renew it?

Dr. Van Woert: I have some in my office that I had three months ago, and it is just as good as ever.—*Extract Dental Cosmos.*

Miller (W. D.) on Experiments Relative to the Form in which Arsenious Acid may be Best Applied for Devitalizing the Pulps of Teeth.—After making a series of experiments with arsenious acid alone and in combination with other substances, such as chlorid of zinc, carbolic acid, lanolin, thymol, and arsenic acid, on mice and to some extent on dogs, Dr. Miller gives the results of these interesting investigations in the September issue of the *Dental Cosmos.* The following brief extract will show his deductions; "At the Dental Institute I have been making use of a paste having the following composition—

℞—Thymoli,
Acidi arsenicosi, āā x;
Ol. caryoph., q s. ut ft. pasta.

We have no reason thus far to be other than satisfied with the results. One disadvantage of this mixture lies in the fact that part of the thymol separates from the arsenic in crystalline form, rendering it necessary to stir the paste from time to time. This difficulty might no doubt be overcome by a slight alteration in the composition of the mixture, possibly by the addition of glycerin.

The results recorded above point to the following practical conclusions:

1. The rapidity and intensity of the action of arsenious acid depends, under certain circumstances, to a very considerable degree upon the substance or substances with which it is incorporated.

2. Where there is but a small point of exposure, and in particular where extensive calcification has taken place in the pulp, escharotics should be avoided, since the contraction of the tissue retards the absorption of the arsenic. This retardation is but slight where there is a broad surface of exposure.

In stubborn cases where applications of the ordinary paste fail to effect the devitalization, a paste consisting of arsenious acid in oil of cloves, glycerin, or salt solution should be employed, undiluted by any third constituent.

3. Thymol is worthy of a trial as a substitute for morphia, on account of its anesthetic and antiseptic properties.

4. For devitalizing pulps of milk-teeth or remains of pulp-tissue in root-canals, arsenious acid, if employed at all, should be diluted by two or three parts of some other constituent (thymol, oxid of zinc, morphia, iodoform.)

In fact, in all cases where, for any reason, a milder action of the arsenic is desired, it may naturally be employed in this diluted form

In these cases Arkovy recommended the use of pepsin for devitalizing the pulp.

The question naturally arises whether results deduced from experiments on mice apply equally well to the pulps of human teeth. It is my impression that such is the case. Nevertheless, it would undoubtedly be well to supplement the above experiments by experiments on the pulps of teeth, although it will always be found very difficult to secure the variety of conditions in dogs' pulps which we meet with in the pulps of human teeth. Experiments on nine teeth (three dogs) gave results which fairly correspond with those reported above."

Merriman (A. F.) on Loop Anchorage in Gold Fillings.—Dr. Merriman does not advocate the use of his method of anchorage in all cases, but he claims that it is useful under the following circumstances; 1. In very large crown cavities with frail walls, where the patient cannot endure a long operation. 2. In starting gold in large compound cavities. 3. In deep labial or buccal cavities. 4. In difficult cavities in porcelain teeth. 5. In all cavities which are to be lined with white cement.

The *modus operandi* is as follows: After removing most of the decay and weak points, cut margins smooth, polish and rinse thoroughly; adjust the rubber-dam, unless already in place, and having thoroughly excavated the cavity and wiped with pure carbolic acid, and capped the pulp carefully if near, have the bracket table cleared of all unnecessary instruments, and cut several strips of No. 120 gold four times the diameter of the cavity one way and one-half the other. Suitable cylinders of standard gold, also some No. 30 if an exquisite finish is required, must be provided, the spirit lamp be ready, plastic instruments at hand, and cement on glass slab. Mix cement quickly with a flat spatula to the consistence of soft putty, roll it into a rope, carry to the cavity with a pointed small spatula, quickly pressing thoroughly into the cavity until at least one-third is filled, lining the walls perfectly, but keeping away from the margin if possible. While the cement is still plastic, quick as a flash place a strip of the 120 gold over the cavity, leaving the ends protrude equally, carefully adjusting in the center, and then holding it there with a suitable instrument with the left hand; with an egg-shaped burnisher quickly press the strip slightly into the plastic; put more of the cement into the cavity, allowing it to press against the walls in all directions. Do not put in too much, and do not allow it to remain against the margins. Press a gold cylinder, one-half the diameter of the cavity, slightly into the cement, which ought to be still a little soft; hold this with an instrument in the left hand, fold down one of the protruding ends of the gold strips, condensing with hand pressure, then the other end, folding it across the first with perhaps another cylinder intervening, then condense thoroughly. If more strength is required, use two or three strips in the loop; and if the opposite wall is frail, making it difficult to get a slight groove, resort to a double loop, giving four ends to bring down, which is especially desirable for a large contour compound filling. The writer, however, would not recommend this method in contour work, except where the cavity is so sensitive as to make it difficult to get either groove or retaining pits. Remove any cement which may be against the margins, blowing away with hot-air syringe. The work up to this point should not occupy more than ten minutes, and the cavity remaining to be filled should be about the depth of the enamel. This is filled in the usual way on the foundation of oxyphosphate and gold. A modification of the loop can be used in irregular cavities, if the entire cement is put in the desired depth and then pressed away, inserting one strip of gold and then pressing cement against it.

The advantages claimed for this method are—1. Perfect filling in half the time. 2. Less metal inserted in the tooth. 3. Gains the advantage of the holding qualities of the oxyphosphate. 4. Extensive cavities can be filled before patient or dentist is worn out.—*Extract Dental Cosmos.*

Caries of the Alveolus.—As a general rule, dentists have not in the past given as much attention to pathological studies as they should. Our best men have been ambitious to shine as operators, or as mechanics, and have neglected the first and most important of all studies, if we are to be considered in any sense as medical men. Beautiful fillings are too often inserted in teeth that are not in a physiological state, or which are in relation with diseased tissues, and the consequences are sometimes very serious. Many teeth are extracted simply because an otherwise excellent operator is not skilled in diagnosis and treatment. Diseases which, if properly treated at the outset, might be easily cured, are not promptly recognized, and are temporized with, receiving only simple topical applications, until the general surgeon must be called in to remedy the effects of the lack of knowledge. Serious tumors have been dallied with until they have invaded tissues which should have been saved from their ravages.

Many of our schools have not given the attention to surgical pathology that is its due. In some there is no real comprehensive course of lectures upon this subject, the usual diseases of the teeth themselves comprising the instruction in this department, surgery of the jaws and face being entirely relegated to the general practitioner. There is some excuse for this in the fact that our curriculum is already so broad that it is difficult in a term of six months to find time for the other lectures and demonstrations. Yet the dentist certainly should be able to diagnose any diseased condition, even though he should desire to turn it over to a specialist.

But there are some conditions requiring surgical interference that should never be allowed to go out of the dentist's hands. One of these is caries of the alveolus. This is a disease that is far more common than the average dentist is aware of. By it is meant the death and disintegration of the alveolar portions of the bone, cell by cell, and without any serious complications. It differs from necrosis in that there is not usually any formation of pus, or at least but little, no special tumefaction or inflammation of the soft tissues, and no tendency toward a sequestrum. In necrosis there is a stoppage of nutrition throughout a considerable portion of the osseous tissue, while in caries it is a slowly progressing ostitis that breaks down the bone one cell at a time.

Not infrequently in the filling of cavities in proximate surfaces of the teeth, which extend well up in the cervical region, the alveolus between them is injured by wedges, or matrices, or separators, and this induces an ostitis which results in a caries that causes the loss of the whole of the septum. It is at best but thin lamina, and hence is specially liable to loss of nutrition through injury. We have known cases in which true necrosis has been the result of such injuries, and a real sequestrum of bone has exfoliated.

Sometimes when there has been violent periostitis about a tooth root, the inflammation has spread to the bone and a carious action been set up. In many instances this will continue after extraction. The cavity perhaps will not fill up by organization of the plastic exudate, the gum will not heal over, and a small cavity will be left. There will be little of inflammation or soreness, and the attention of the patient will not be called to it until the cavity has assumed considerable proportions. If, then, an examination be made with an exploring instrument, the bone will be found bare, and it will be soft and spongy. It will not feel like necrotic bone, but difference between this and sound tissue can be readily recognized.

A carious condition of the alveolus will sometimes be the result of an anæmic or atonic state. It may be indicative of an inherited syphilitic taint. Of course, it will be most often found in those who are in a debilitated state. The dentist should always examine for this when such patients who have been subjected to dental operations fall into his hands. It may be that he will need to scrutinize closely, for sometimes it is not very manifest.

The treatment, of course, is carefully to remove that which is carious and spongy, apply antiseptics, these to be followed by stimulating applications, like iodide and chloride of zinc, ten to twenty grains to the ounce of water. If the caries is at all extensive, the patient will probably be in an atonic condition, and alteratives, with liberal diet and careful hygienic precautions should be prescribed. Preparations of iron may be administered. The hypophosphites are useful, and tonics generally. If there is reason to suspect any constitutional taint, iodide of potassium may be prescribed, or the syrup of iodide of iron, from twenty to forty drops three times per day.

But if the dentist does not desire to attempt general remedies, at least he can and should remove the carious bone by means of bone curettes, or perhaps the engine bur, and give such topical treatment as is needed. Unless he is competent to diagnose the condition and do this much, he can scarcely call himself a surgeon dentist.—*Dental Practitioner and Advertiser.*

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.*

The thirteenth annual meeting of the National Association of Dental Examiners was held at Old Point Comfort, Va., beginning Tuesday, August 7, 1894; Dr. J. Searle Hurlbut presiding. In the absence of the secretary, Dr. C. A. Meeker was appointed secretary *pro tem.*

The following State boards were represented:

Alabama—T. P. Whitby.
Delaware—D. M. Hitch, C. R. Jefferis.
District of Columbia—H. B. Noble, Wms. Donnally.
Georgia—B. H. Catching.
Illinois—L, L. Davis.
Iowa—J. T. Abbott.
Kansas—L. C. Wasson.
Kentucky—C. G. Edwards.
Massachusetts—J. Searle Hurlbut.
New Jersey—F. C. Barlow, Chas. A. Meeker.
North Carolina—V. E. Turner.
Pennsylvania—W. E. Magill, Louis Jack, D. Ashley Faught.
Tennessee—J. Y. Crawford.
Virginia—J. Hall Moore, E. P. Beadles.

The secretary read a communication from the board of examiners of the State of Minnesota, insisting that their resignation tendered in 1892, should be accepted. On motion of Dr. C. G. Edwards, the resignation was accepted.

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* Courtesy of *Dental Cosmos.*

An application for membership from the board of examiners of the State of Oregon was received, and the secretary instructed to answer the same.

On motion of Dr. F. C. Barlow, the secretary was instructed to have the constitution, by-laws, and standing resolutions to date printed in pamphlet form und sent to all members of the association.

On motion of Dr. Louis Jack, the secretary was instructed to have the proceedings of the association at its meetings of 1893-94 printed in one pamphlet.

The secretary read a memorial from the examining boards of New York, New Jersey, Delaware, Rhode Island, Connecticut, Pennsylvania, and the District of Columbia, regarding the necessity of uniformity in standards of examinations in different States, which, with the following resolution on the same subject, laid over last year, was referred to a committee consisting of Drs. Faught, Crawford, and Catching:

Resolved, That it is the sense of the National Association of Dental Examiners, that when a member of the dental profession presents a certificate of registration from a State board of dental examiners, duly created by law, that the same should entitle the holder of such certificate to registration without an additional examination in any State of the Union having a law to regulate the practice of dentistry. *Provided*, such certificate was obtained on examination.

The committee subsequently reported, recommending the adoption of the memorial as expressing the sense of the association.

The report was adopted, a verbal amendment to the memorial offered by Dr. Donnally being accepted, making it read as follows:

To the National Association of Dental Examiners:

Gentlemen,—Delegates from the examining boards of New York, New Jersey, Delaware, Rhode Island, District of Columbia, Pennsylvania, and Connecticut, in conference assembled, respectfully offer for your consideration the opinion that ours is an advancing profession, our watchword is progress, and we ask that your influence shall be actively directed to secure thorough preliminary examinations in every dental college in every State.

We think the true interests of our profession demand such uniformity in standards of examinations as can be obtained by State boards, always striving after higher and better attainments, and with a view to ultimately bring about a safe, judicious and fair reception of certificates from State boards of other States.

It is our opinion that it would be most desirable that a law whose provisions should be uniform, yet whose phraseology might be different, so as to suit differences of environment in the various States, should be enacted in all the States. It is not practicable to have any such law enacted in all the States at once; but if such a law were enacted in half-a-dozen leading States, other States would gradually fall into line and adopt similar ones.

We are in favor of bringing responsibility for defective education as directly as possible upon the offending school, with a view to making every diploma real and reliable evidence as regards the holder's ability and proficiency. Therefore we will use our influence as practitioners, as well as members of examining boards, tooobtain the selection, by competent authority, in each State, of an independent body, disconnected from the institutions which educate, with sole authority to grant licenses and admit to practice.

G. Carleton Brown, *Secretary.*

The Committee on Colleges reported that there are now twenty-eight recognized and fifteen unrecognized colleges; that there have been no additions to the accepted schools.

The chairman, Dr. Jack, read the following report of the numbers of matriculates and graduates at the different schools:

RECOGNIZED SCHOOLS.—1894.	Freshmen.	Juniors.	Seniors.	Graduates.	Post Graduates.
1. Baltimore College of Dental Surgery, Md.	47	45	40	37	
2. Boston Dental College, Mass.	55	55	35	33	
3. Chicago College of Dental Surgery, Ill.	127	116	69	58	28
4. College of Dentistry, Department of Medicine, University of Minnesota	23	12	6	6	
5. Dental Department Columbian University, D. C.	12	19	8	8	1
6. Dental Department, National University, D. C.	6	9	8	8	
7. Northwestern University Dental School, Ill.	33	36	25	24	6
8. Dental Department Southern Medical College, Ga.	19	4	4	4	
9. Dental Department University of Tennessee	16	12	12	10	
10. Dental Department Harvard University, Mass.	31	14	18	14	
11. Indiana Dental College, Ind.	29	32	23	23	
12. Kansas City Dental College, Mo.	54	36	18	16	
13. Louisville College of Dentistry, Ky.	54	27	10	9	
14. Missouri Dental College	41	31	21	21	
15. New York College of Dentistry	111	92	81	62	1
16. Northwestern College of Dental Surgery, Ill.	32	36	25	24	
17. Ohio College of Dental Surgery	57	57	34	34	
18. Pennsylvania College of Dental Surgery	100	80	63	62	
19. Philadelphia Dental College	93	107	78	77	
20. School of Dentistry of Meharry Medical Department of Central Tennessee College	4	3	3	3	
21. Dental Department University of California	68	45	18	18	
22. Dental Department University of Iowa	70	39	32	31	1
23. University of Maryland, Dental Department	58	54	36	34	2
24. University of Michigan, Dental Department	67	52	66	64	1
25. University of Pennsylvania, Dental Department	81	72	65	64	3
26. Vanderbilt University, Tenn.	55	44	25	25	
27. Western Dental College, Mo.	42	36	27	26	
28. American College of Dental Surgery, Ill.	128	71	51	44	77

UNRECOGNIZED SCHOOLS.	FRESHMEN.	JUNIORS.	SENIORS.	GRADUATES.	POST GRADUATES.
University of Denver, Dental Department	9	4	3	3	
University of Buffalo, Dental Department	38	32	6	6	
Cincinnati College of Dental Surgery	5	3	5	5	
Atlanta Dental College	61	31	26	26	8
Howard University, Dental Department	6	6	5		
Dental Department Homœopathic Hospital College	12	7	4	4	
Western Reserve University, Dental Department	9	15	4	4	
Cincinnati College of Medicine and Surgery, Dental Department*					
Detroit College of Medicine, Department of Dentistry	16	21	1	1	
University College of Medicine, Department of Dentistry, Richmond, Va*					
The New York Dental School*					
Birmingham Dental College, Alabama	17	7	3	3	
Marion Sims College of Medicine, Dental Department, St. Louis (first session, September 11, 1894)*					
Dental Department, Tennessee Medical College*					
United States Dental College, Chicago*					

* No report.

On motion of Dr. Meeker, the following was adopted:

Resolved, That any State Board not represented by delegates at three successive meetings of this body should forfeit its membership.

On motion of Dr. Louis Jack. the following was adopted:

Resolved, That this body require the board of examiners in each State to become informed of the character of any school which may have been organized within its jurisdiction, and to have especial care in its scrutiny of any college which may have applied for admission to the National Association of Dental Faculties.

The following were elected officers for the ensuing year:

L. Ashley Faught, president; J. T. Abbott, vice-president; Chas. A. Meeker, secretary and treasurer.

After which the association adjourned to meet at the time and place appointed for the next annual meeting of the American Dental Association, this body to convene at 10 A. M. on the day preceding the date set for the meeting of the American Dental Association.

EDITOR'S NOTES.

ABUSE OF THE USE OF COCAIN.

Cocain rightly used is a valuable drug for the dental practitioner, but its use has been abused. Strong solutions, from 5% to 20%, have been employed for hypodermic injection about the mouth and of 10% to 25% used as a local application to the mucous membranes. Many serious results have been reported and probably many have occurred where publicity has been suppressed. Cocain should always be used with caution and it is questionable whether a stronger solution than 2% should ever be given hypodermically. Reinforcement of the patient with physiological antagonists before administration of cocain, as suggested by Dr. C. P. Pruyn* and others, is certainly commendable, but even when this precaution has been taken cocain should not be recklessly used, for although reinforcement counteracts to a degree the systemic effects, it cannot be considered a positive barrier to all amounts that may be applied or injected. While such abuses of the drug are made by many dental practitioners and are of themselves serious enough, they do not compare with the abuses from the hands of many physicians and pharmacists. At the recent meeting of the American Medical Association Dr. D. B. Delavan called attention to the fact that the use of cocain, by the general public, is increasing to a serious extent. When cocain was discovered and pronounced a harmless preparation, many physicians in way of investigating its effects became victims of the cocain habit and physically wrecked from this ignorant use.

Dr. Delavan continuing, says: "Later, the drug was prescribed by physicians for their patients. It was especially popular for coryza and a panacea for hay fever. Placed in the hands of a neurotic patient it is not strange that it should soon become indispensable to him. The strangest episode in the whole history of cocain is that certain medical men who have become its victims have been the very ones to disclaim its harmfulness, to freely prescribe it, and to recommend its use in their published works. As to this charge the rhinologist has much to answer for. Under his advice the patient has used it as a nasal spray, and has continued it, until the habit has become established and the spray has been exchanged for the hypodermic needle.

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*See Ohio Journal, Aug. number, page 350.

More recently cocain has been used by the manufacturers of patent medicines. Catarrh snuffs, throat lozenges and various other preparations containing it are urged upon the willing public. The general consumption of the drug has become very large and its use extensive. There seems to be no section of the country where it has not penetrated. Institutions for the reform and cure of the alcoholic and opium habits now advertise to cure the victims of cocain. The testimony of intelligent physicians generally, and the writer has questioned many from all parts of the United States, is to the effect that the evil has grown to serious proportions. I have therefore, thought fit to bring the subject before this meeting, in the hope that an earnest protest might be made by the representative association of this country, against the abuse of the drug cocain. It is not necessary to go into the details of the question, for these are already painfully familiar. We all know the story of cocain from beginning to end. We know the great value of the drug when properly used, the peculiarly delightful effect which it seems to have upon many persons, the recklessness with which it has been prescribed and the baleful effects which have followed its over use. Is it not time, then, that we who have in part been the cause of this state of things should give our attention to the subject?

In view of the present state of the matter, the following propositions are offered:

1. Cocain, one of the most useful of drugs, is capable of being more harmful than even alcohol or opium.
2. The use of cocain is increasing to a serious extent.
3. For this the medical profession is largely responsible.
4. It is the duty of the profession to guard the public by every proper means against the dangers arising from the use of cocain.
5. To this end, it is desirable that this Association place itself on record as distinctively discountenancing the careless use of cocain: *a*, by the manufacturers of proprietary medicines; *b*, by the general public; *c*, by the general profession; *d*, and, lastly and particularly, by the Department of Rhinology, which we represent."

It is no less the duty of the dental practitioner to guard, at all times, what he says about cocain, and never be guilty of contracting the habit himself, or being the means of ruining the lives of others through recommending the use of this treacherous drug.

THE HORACE WELLS ANNIVERSARY CELEBRATION.

Arrangements are about completed for the celebration of the Fiftieth Anniversary of the discovery of nitrous oxide anesthesia by Dr. Horace Wells, of Hartford, Conn. The sculptor has nearly completed the memorial tablet, said to be an exceedingly beautiful design, which will be placed, in a most conspicuous place, near the corner of two of Hartford's principal streets. It will contain a portrait of Dr. Wells, together with a plain statement of the facts of the great discovery.

The Connecticut State Dental Asoociation first took steps toward this celebration, but decided that instead of a state it should be made a national affair and it was decided to send notices to many of the representative men in the profession throughout the country. We understand that the replies in every instance have been most satisfactory and the affair promises to be a great success.

The following is a part of a circular sent out by the Anesthesia Committee :

You are doubtless aware of the action of the American Dental Association at its recent meeting held at Old Point Comfort, Va., with reference to holding a National Celebration of the Fiftieth Anniversary of the discovery of the Anæsthetic properties of Nitrous Oxide, by Dr. Horace Wells.

The Committee by vote of the American Dental Association, was instructed to procure two papers to be read at the celebration. One upon *History of Anesthesia*, by Prof. Thomas Fillebrown of Boston, and on the *Benefits of Anesthesia to Mankind*, by Prof. James E. Garretson of Philadelphia.

The Committee was further instructed to arrange for a Banquet to follow the meeting, at which distinguished speakers shall make appropriate addresses. A full report of the celebration, including the papers and addresses to be printed and issued, as a permanent souvenir of the occasion.

Arrangements have been completed to the extent of securing favorable responses from the essayists named, whose papers are now in course of preparation.

The banquet arrangements are also largely completed. The fee to include admission to the banquet and one copy of the Souvenir volume, has been placed at $10.00. It is necessary that the Committee shall have ample notice of the number who will be in attendance, in order that places at the banquet may be provided for all who desire to attend, and also to determine the size of the edition of souvenir volumes to issue.

The celebration will be held in Philadelphia, on Tuesday, December 11th, 1894.

You are cordially invited to participate in this event, which should enlist the enthusiastic support of every member of our profession.

To that end you are requested to send your check and notify the Chairman of the Anæsthetic Committee, at the earliest date possible, in order that an official invitation may be sent to you.

All communications should be sent to

Dr. J. D. Thomas, *Chairman*,
912 Walnut St., Philadelphia, Pa.

NEW PUBLICATIONS.

A Manual of Operative Technics.—A Practical Treatise on the Elements of Operative Dentistry. By Thomas E. Weeks, D.D.S., Professor of Operative Dentistry and Dental Anatomy in the College of Dentistry, Department of Medicine, University of Minnesota. Chicago: H. D. Justi & Son, Publishers, 1894.

This is the first work to appear on this subject, although dental technics has been taught in some of the dental colleges for several years past. The branch comprises, mainly, operations upon the teeth out of the mouth, and at present seems indispensable to the student. It exercises the mind and eyes, and develops manipulative ability in the fingers; in fact, is a sort of manual training.

Aside from descriptions of the various instruments, materials and appliances used in operative work, directions for performing all the important operations about the teeth are given. When the student has finished this course, he can go to the dental chair with less hesitancy and nervousness, and improve much more rapidly in actual operations from having had this instruction. The work has been approved as a text-book by the American Association of Dental Faculties, and is a credit to the author. There is one thing more, however, that we believe could have been incorporated to advantage, and that is the subject of matching artificial teeth in color and shade. The eye needs training in this direction, for comparatively few of our young men have ever paid much attention to colors and shades, much less the matching of them. It is, nevertheless, an important thing to select a crown, facing, or artificial tooth, that when adjusted will harmonize with the natural, for nothing attracts attention quicker than one mismatched.

The book is well gotten-up, printed and bound, and great benefit will be derived from its use.

A Text-Book of Physiological Chemistry. By Olof Hammarsten, Professor of Medical and Physiological Chemistry in the University of Upsala. Authorized Translation from the Second Swedish Edition and from the Author's enlarged and revised German Edition. By John A. Mandel, Assistant to the Chair of Chemistry, etc., in the Bellevue Hospital Medical College and in the College of the City of New York. New York: John Wiley & Sons, 1893. Pp. x–511. Price, $4.00.

Literature, in the English language, on this important subject has been meagre and incomplete, but with the advancing demands for more extended information in this line the subject of late has received more attention and an authorized translation of Dr. Hammersten's work is one of the results.

This most excellent book is not only a valuable one for students, but for the general medical and dental practitioner as well. It supplies the reader with a condensed and, as far as possible, objective representation or the principal results of physiologico-chemical research, and also with the principal features of physiologico-chemical methods of work. Considerable space is given, also, to the more important pathologico-chemical facts. The author says: "The study of physiologico-chemical processes within the animal body must precede the study of its component parts, its fluids and tissues; and this latter study, according to my experience, will then only inspire true interest if the study of the physiological significance of those component parts be closely pursued in connection with that of the transformations which take place in these fluids and tissues."

The subjects elaborately treated are; The Protein Substance—The Animal Cell—The Blood—Chyle, Lymph, Transudations and Exudations—The Liver—Digestion—Tissues of the Connective Substance—Muscle—Brain and Nerves—Organs of Generation—Milk—The Skin and its Secretions—The Urine—The Exchange of Material, etc. Thus it will be seen that all organs and tissues of the human economy are physiologico-chemically treated. Aside from this, the work contains the best methods for the preparation, detection, and quantitative estimation of most of the substances found in the organism, and its excretions and secretions. Urinary analysis being somewhat elaborate. It is a most excellent book for both study and reference, and should be in the library of every progressive practitioner.

DIRECTIONS FOR LABORATORY WORK IN BACTERIOLOGY. By Frederick G. Novy, Sc.D., M.D., Junior Professor of Hygiene and Physiological Chemistry, Ann Arbor. George Wahr, publisher, 1894; pp. 209. Interleaved. Price, cloth, $1.50.

This is essentially a laboratory book, which gives the technic of practical bacteriologic study. It is not a treatise on bacteriology, but a working guide, and has been so admirably arranged and condensed that the student readily obtains just what he requires. The methods of preparation and examination of bacteria are fully given. The preparation of the various culture media is minutely described; formulæ for staining fluids, methods of staining and infection, *post mortem* examination of infected animals, preparation of tissues of infected animals for microscopical examination, etc., are carefully presented. The life history of many bacteria is given in tabulated form, similar to that of Eisenberg, naming most favorable media for their culture, conditions for growth, best staining preparations, etc. It is a most useful book not only for students, but for anyone who contemplates the study of bacteriology.

Syllabus of Lectures on Human Embryology. For Medical Students and Practitioners. With a Glossary of Embryological Terms. By Walter Porter Manton, M.D., Professor of Clinical Gynæcology and Lecturer on Obstetrics in the Detroit College of Medicine; Fellow of the Royal Microscopical Society, of the British Zoological Society. American Microscopical Society, etc., etc. Illustrated with seventy (70) Outline Drawings and Photo-Engravings. 12mo, Cloth, 126 pages; $1.25 net. Philadelphia: The F. A. Davis Co., Publishers, 1914 and 1916 Cherry Street.

This work furnishes to students and practitioners of medicine an outline of the principal facts in human embryology, being an introduction to the study of obstetrics and gynæcology. It is not intended to take the place of larger works, for it does not contain the detail and theory of these, but forms rather an outline of the essentials. It should be a valuable aid to the student, as it will serve the purpose of a guide during the elaboration of the subject by the teacher. It is interleaved, for adding notes or other illustrations, and for the benefit of those who desire to read up on any special subject, numerous reference foot notes have been added. The illustrations are good and the book neatly printed and bound.

Transactions of the Illinois State Dental Society, 1894—As usual contains much valuable matter. The Illinois State Dental Society is one of the best in America, and its transactions are always interesting. The Publication Committee, Drs. Louis Ottofy, A. W. Harlan and E. Noyes, as might be expected, have done their work well.

SOCIETIES.

OHIO STATE DENTAL SOCIETY.

At the next annual meeting of the Ohio State Dental Society we will have papers and clinics from the following well known men: Drs. H. L. Ambler, Chas. Welch, D. A. Allen, L. P. Bethel, Henry Barnes, C. M. Wright, N. S. Hoff, L. E. Custer, Grant Molyneaux, F. E. Battershall, Grant Mitchell, J. Taft, J. R. Callahan, W. V. B. Ames, of Chicago, and several others to be heard from yet.

There will be some things entirely new demonstrated, chief among which will be the baking of a continuous gum plate in an Electric Furnace, which is about half as big as your hat.

A great advance has been made in swaging plates; this will be demonstrated.

A method for making crowns fit the end of roots will be shown; it's a sure thing too.

Bridge-work will be soldered without blow-pipe and other things of interest too numerous to mention.

The meetings will begin Tuesday, Dec. 4, at 10 A. M., and close Thursday the 6th. A half day will be devoted to clinics, it may be the first or last day. Come early and get a front seat.

TRI-STATE DENTAL SOCIETY.—The meeting of this society will be held in Detroit, Mich., on the *third* Tuesday of June, 1895, instead of the first, as an oversight last month made us announce.

OUR AFTERMATH.

OHIO STATE DENTAL SOCIETY.—Annual meeting at Columbus, Dec. 4-5-6. Be sure and arrange to attend. It promises to be one of the best.

IT is stated in a recent publication that the word anæsthesia was coined by Oliver Wendell Holmes. He first used it in a letter to Dr. Morton, dated November 21, 1846.

APPOINTMENT.—Governor McKinley has appointed Dr. F. H. Lyder, Akron, Ohio, a member of the Ohio State Board of Dental Examiners to fill the vacancy caused by the resignation of Dr. Grant Mitchell, of Canton.

DELTA-SIGMA-DELTA FRATERNITY.—At the last annual meeting of the Supreme Chapter, the following officers were elected: Supreme Grand Master, R. B. Tuller; Supreme Worthy Master, F. H. Zinn; Supreme Scribe, A. H. Peck; Supreme Treasurer, P. J. Kester.

MARRIED—JENNINGS-FOSMIRE.—At the residence of the bride's father, at Cleveland, Ohio, on Sept. 27th, 1894, Dr. William Jennings, son of Dr. D. R. Jennings, and Miss Carrie Fosmire, daughter of Mr. Merritt Fosmire, were united in marriage. We extend hearty congratulations and best wishes.

MARRIED.—At the residence of the bride's parents, at Oberlin, Ohio, August 29, 1894, Dr. William A. Siddall, of Cleveland, son of Dr. J. F. Siddall, Oberlin, to Miss Mary I. Beard, of Oberlin.

DIED—WILSON.—At his home in Painesville, Ohio, Oct. 3rd, 1894, Dr. D. C. Wilson, aged 64 years, died suddenly from heart failure, superinduced by a severe attack of pneumonia. Dr. Wilson was the father of Dr. G. H. Wilson, Cleveland.

DIED.—At his home in Saline, Mich., July 10th, 1894, Dr. H. D. Heller, of peritonitis. He was a graduate from the dental department of the University of Michigan, class '87.

BUT HE CAN'T ADVERTISE:—

A physician sits in his office chair,
And there broods on his face of care
While he groans and wails and tears at his hair.

"Alas! and alas! and alack!" he cries;
"Surely fortune and fame would both arise
If Old Ethics would let me advertise."

At last a bright thought comes into his brain
Says he: "I must try that old racket 'tis plain;
It worked O. K. once and I'll work it again."

He wrote half a page on "The Evils of Pork,"
And the case of a man who swallowed a cork
And a spoon and a knife, but got stuck on a fork;
Told how he cured an imprudent fellow
Who swallowed entire a Gingham umbrella
And brought intact from the patient's patella.

The newspapers all extended their thanks;
He opened accounts at the various banks;
He'd baited with Ethics and caught all the cranks.

—*Printers Ink.*

[We have 'em in the Dental Profession also.]

THE
OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

THE USE AND ABUSE OF BRIDGE-WORK.

BY L. P. HASKELL, CHICAGO.

THAT bridge-work in its indiscriminate use is greatly abused, no honest practitioner will deny. That it has a proper and legitimate use no one can deny.

What is its legitimate use? 1st. In the loss of lower bicuspids and molars when there is a posterior molar remaining, a properly constructed bridge is superior to any other denture. Why? Because partial lower plates, as a rule, are the most unsuccessful dentures worn, while the bridge makes a solid masticating surface, instead of a yielding and constantly settling plate.

On the upper jaw bridges of not too many teeth, are useful in the case of loss of posterior teeth, if there are firm anchorages. In the loss of anterior teeth the bridge *piers* are subjected to a lateral strain in biting, especially of hard substances, crusts, etc., that often make them a failure. Great judgment must be used in constructing such dentures, and especial care taken that there be no occlusion of the lower teeth. The same holds true of crowns upon anterior roots.

Two of the most objectionable features of bridge-work are

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

found in the necessity for mutilating the teeth in order to properly adjust the bands, and in the unsightly appearance of the bands, especially on the anterior teeth. This and other objectionable features of bridge-work are avoided by the use of the Parmly Brown system of crowns and bridges, as no teeth are mutilated and no metal is seen. They are at once, strong, durable, artistic and cleanly.

Constructed upon a saddle of platina, so adjusted to the membrane as not to irritate, and yet not to admit of fluids; fastened to adjoining teeth with fillings either of gold or amalgam; applying, when needed, an artificial gum so perfect as not to be perceived, the careful operator produces a perfect and durable denture.

Too much care can not be taken to secure such occlusion of the teeth that no *strain* whatever shall come upon a crown or bridge.

Yet there are many cases where a nice fitted gold plate, with *carefully* adjusted clasps serve a better purpose than would a large bridge so far as permanency is concerned.

The facilities for doing porcelain work are greatly improved by the introduction of the new oil furnace, invented by C. H. Land. Having used it for four months, I find it working admirably, and is so simple in its construction. A greater heat can be secured than in the coke furnace, so that block carving body can be readily baked.

But the greatest advance yet made is found in the *Electric* Furnace, invented by Dr. Custer, of Dayton, Ohio. He recently brought one to our laboratory and readily baked a set of continuous gum. One can at a distance of a few inches watch the process, it not being necessary to close up the furnace, which is not much larger than the largest vulcanizing flask. A smaller one, suitable for crown and bridge-work can be carried in the pocket. The Edison incandescent current furnishes the power.

SYSTEMIC DISTURBANCES AND THEIR RELATION TO DENTAL DISEASES*

BY N. B. ACHESON, YOUNGSTOWN, O.

The successful investigation of any subject requires the laying aside of all preconceived ideas on that subject, to enable one to view phenomena without prejudice. It certainly would be hard for a person with unalterable ideas to advance very far in any scientific research.

In the study of systemic disturbances and their relation to disease it is necessary to have, what few of us possess, a thorough knowledge of the human body. In our advancement in this knowledge we soon discover that the various parts of the system are so intimately connected or interwoven and dependent upon each other, that an obstruction or excitement of one part has an important bearing, to a greater or less degree, upon every other part, and as to the true knowledge of this fact we seem to be very much in the dark, for in trying to solve the science of these relations we are brought to a sudden stop by an astounding, mysterious something, of such vast proportions, and so apparently impenetrable, that we have thus far been forced to confess our inability to understand it.

The various scientific phenomena have in the past been considered just as mysterious, yet we know that much real progress has been made in their solution, so that it is but natural to expect, that in time, if not in our day, this subject will be grasped more intelligently than at present. There was a time when water flowing to a lower level was considered to be just as mysterious, but with the advancement of knowledge that mystery has largely disappeared, and we are able to take advantage of and control that tendency so that it can be made a blessing to humanity. Not only this but the blowing of the wind, the falling of the rain, the flash of the lightning and the roar of thunder were all mysterious, but at present we account for all these things scientifically.

To us there is a mysterious phenomena which takes place in the human system which we call sympathetic action. For instance, we know that if a person by exposure experiences a chill, a condition of systemic disturbances will be produced which will likely cause a determination of the blood to an injured or obstructed part, and according to our observation they often result in disease, say hyperæmia of the pulp of the tooth, producing more or less neuralgic pains wherever this pair of nerves is distributed, and sometimes acting through the motor nerves may produce muscular spasm. Just how these symptoms are produced, or in other words, how it is that the sensation of violent pain, shooting from place to place where the presence of disease is not suspected, how it is that the gum disturbances and apthous patches nearly always accompany gastritis, whether one is actually dependent upon the other; or whether they are independent of each other and dependent upon some other systemic disturbance is what we would like to know. Perhaps a chill, which we know seems to be able to produce a large number of complications from nasal catarrh to stomatitis, pharyngitis, tonsalitis, laryngitis, bronchitis, pneumonia, gastritis and constipation, is condusive to general congestion.

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*Read before the Northern Ohio Dental Society, 1894.

It is believed that catarrh is sometimes caused by the roots of abscessed teeth extending into the antrum, or so nearly through that only a thin osseous covering is all that separates them, and discharging into this cavity causes a septic condition of its membrane, the discharges from both of which passing through the antral opening induces nasal catarrh. The trouble may not stop here, but progress along the respiratory track and assume a serious character.

This peculiar sympathetic action has for a long time been receiving gradually increased scientific attention, and well it may, for whichever way we turn our investigations we find it demanding our most careful thought and closest scrutiny. In infants it seems to be conspicuous, and always attracts attention. Particularly is the period of dentition apt to be accompanied with cutaneous eruptions, indigestion, convulsions, and febrile conditions. The gums at this time frequently present a congested and angry appearance, and as more or less of these symptoms are often relieved by the free use of the lance, it follows naturally that these disturbances are laid at the door of dentition. Of late the follicular development, taking place in the intestines at that time, to enable the child to digest and appropriate starchy food, is receiving more attention as well as some of the blame for infantile troubles. Thus we are continually being made to realize that there is a mysterious something which we have not mastered that presents itself whenever we attempt to diagnose systemic disturbances and their accompaniments. It should be said in compliment to man's energy in the field of scientific research that he does not shrink from the task of trying to understand thoroughly all these things, and certainly much progress is being made in the progress of human ills.

It is by observation that we are led to believe that salivation is in some way produced by the administration of a mercurial agent. This drug, though inert in the form that it is used, yet by combining with the secretions of digestion is rendered capable of absorption, and it has been believed that the accompanying congestion of the gums was also directly caused by the same agent, though of late it is known that where there is no calculus around the teeth there will be no congested gums. To the observer the question naturally arises, what principle does this drug receive when introduced into the system, that enables it to produce such violent symptoms? It would seem that some peculiar form of molecular vibration had thus been imparted to it, enabling it to pass into the system and accomplish so much by producing discords of vibratory action of the already over laden nerves of this pair and so render them unable to perform their functions, thus allowing the blood vessels to become flabby and distended with blood, resulting from inflammation.

The science of dynamics is founded upon the idea that all natural phenomena is dependent upon motion of the minute particles of matter. For instance, a certain number of vibrations or pulsations of luminiferous ether within a certain time pass through the humors of the eye, where they impart their motion to the molecules of the optic nerve, which transmits them to the brain, where they produce the sensation of light. It has also been discovered just how many pulsations in a given time are necessary to produce each color impression. At times some colors or rates of vibration are more pleasing to the eyes than others, and have a more comfortable effect upon the system, as is instanced by the use of colored glasses for the relief of certain systemic disturbances, proving that some rates of pulsation augment systemic disturbances. It is not long since that many believed that all human ills were supposed to be curable by bathing the patients in colored light, and like other fads, run its course and was dropped. Perhaps too much was expected of it, or that the principle was never properly understood and applied. Yet the papers of late have stated that a hospital ward in an eastern city is to be fitted up for the treatment of small-pox patients by the application of colored light. Statements have been made that this principle rightly applied would prove to be a specific for that disease.

The solar ray has many other rates of vibrations which the prism refracts off by themselves, and although perfectly dark as far as our vision is concerned, yet we see their effect upon nature. The ultra red rays are calorific and by them alone we may raise refractory substances to such a high rate of molecular vibration as to produce sensations of light. The ultra violet rays are also dark to us, but have powerful chemical effects, and by their action photography is made possible. By them the color in our garments, carpets, wall paper, etc., is made to fade. The rending asunder of the atoms of certain molecules and forming with them other molecules, proves them to be powerful. We should not be surprised when the science of dynamics and their relation to the human system is more thoroughly understood, to realize that under the proper conditions, these forces will produce systemic disturbances, also the conditions necessary to support the much detested micro-organisms, and also by proper control they may be made to effect a cure of many ills.

No one, I take it, will dispute the fact, that sound sensations are produced by atmospheric vibrations transmitted to the brain, or that the pitch of the tone depends upon the number of vibrations so transmitted, or that perfect synchronism in the form of perfect melody does produce a wonderfully soothing effect upon the whole nervous system. Knowing these facts in regard to these two senses, we may reasonably expect equally astonishing results of the other three senses, viz: smelling, tasting and feeling, which is equally dependent upon dynamics for their ability to transmit comfortable and uncomfortable sensations.

The idea which this paper seeks to promote, is the theory that all nervous action is produced by molecular vibration within the nerves, and forms of motion communicated to them, which are of a rate of vibration which will interfere with their natural function, will cause discord, producing pain or disease, or both.

As the various nerves freely anastomose with each other, we may expect accompanying troubles.

The statements of incidents might be carried to a greater length which would seem to bear out this idea, if handled by those more proficient than I am, on this subject. Certain it is that all, according to their ability, are interested in observing the effect of natural laws upon the human system.

We are all to a certain extent conversant with some of the effects electricity has upon human sensitiveness. It is even used as a mode of capital punishment in one of the states of our union, and we can readily believe that with it death is caused by the intense vibrations. With less intense vibrations properly applied, peculiar systemic phenomena may be observed. If we place one pole of a continuous electric circuit to the forehead, and the other over the infraorbital nerve, we receive the sensation of vivid flashes of light, and we reason that the electrical energy has, by its passage through the parts, imparted enough of its vibration to the optic nerve to produce the appearance of light. By the skillful application of this agent, the pupil of the eye may be dilated, the hearing intensified, the sense of smell and taste excited, and the peristaltic action of the bowels increased or diminished.

There are so many things that we meet with in the study of the phenomena of the human system, that seem so hard to understand, that in their investigation we naturally turn in any direction that may seem to give some light to our understanding. Yet we are thus far only able to theorize, not only as to the cause of systemic disturbances, but why one disease will often seem to produce another. What we would like to know, for instance, is why a notable congestion of one eye with a profuse secretion of tears, of fourteen years standing, should almost immediately disappear after the extraction of a carious tooth from the same side of the mouth of the patient. Why a case of amarausis of the right eye, of twelve years standing, should be cured by opening and proper treatment of the pulp chamber of a right superior bicuspid. Why cases of insanity have been cured by the incision of the gum to promote the eruption of a wisdom tooth. How diseased teeth have been known to affect the hearing on the same side of the head. Why particular sounds have been known to produce pain in certain teeth. Why epilepsy has been cured by the extraction of diseased teeth from the patient's mouth. I might quote from standard authors many more notable cases, but these are enough to show that one systemic disturbance does often seem productive of others. But as yet we seem to be in the dark as to the certain knowledge of the true cause.

I trust you will pardon me for the apparent digression from the subject at issue, though I have not confined myself, as perhaps I should, to the dental diseases and their accompaniments, yet these phenomena appear so important with all forms of health and disease, that I have taken the liberty to make much of them in this paper, in the hope that others who may have more ability and education than I have, will take up the subject and follow it to a logical conclusion.

A NEW VULCANITE CHISEL.

BY G. H. WILSON, D.D.S., CLEVELAND, OHIO.

This instrument is the same in form, but larger than No. 48 of the S. S. White operating chisels. As it is triangular in form it has three cutting edges, the one at right angles to the shank is ⅜ of an inch in length, used as a chisel, for carving the plate about the teeth, etc.; the two terminating in the shank can be used as pointed scrapers.

These instruments are made only for socket handles; handle No. 10 will serve a very good purpose, but No. 8 is the best, because of its size.

The instrument will also be found very useful in trimming away an excess of wax from about the teeth.

The chisels are known in the Cleveland Dental Depots as the Wilson chisels.

THE EVOLUTION OF ARTIFICIAL CROWNS.

BY D. A. ALLEN, D.D.S., TOLEDO, O.

This very useful but much abused method of restoring the broken down crown of a human tooth by an artificial substitute originated very early in the history of the Dental Art.

As far as we have been able to discover, it is spoken of in the oldest accounts of dental operations, and even then is not spoken of as new. It is therefore undoubtedly one of the first operations undertaken upon the human teeth.

The exposed position of the anterior teeth renders them liable to be broken off by accident as well as the ravages of caries. In such cases we can readily imagine the desire (on the part of person so afflicted) to have such a conspicuous member replaced by an artificial substitute.

An examination of the remaining root, revealing an opening or canal, undoubtedly first gave rise to the idea of replacing a substitute by means of a dowel in the pulp canal, and a corresponding canal in the substitute. The idea perhaps first originated in replacing the crown of a tooth which had been broken off by accident. This gave rise to the idea of making an artificial crown and applying by the same means; which would only be a step in advance of the first operation, and naturally suggested by it, the crown of a human tooth, or that portion of the tooth from some inferior animal, or carved from bone or ivory, serving the purpose. These were used exclusively until about 1774, when mineral or "incorruptible teeth" (as they were then called) commenced to supersede the animal product. Owing to the many difficulties encountered and the slow progress in the perfecting of the new crowns, in the way of form, color, strength, adaptability, etc., it is only within the last half century that porcelain crowns have entirely superseded the animal substitute.

In 1774 M. Duchateau, an apothecary of St. Germaine, France, being disgusted with the ivory he was wearing, conceived the idea of reproducing them in porcelain. His first efforts with the new material being unsuccessful, owing to the excessive contraction of the material used in the manufacture of porcelain at that time, during the process of firing. He persevered, however, with various combinations of the component ingredients, and with the assistance of M. De Chemaut, a dentist of Paris, and in due time their combined efforts were crowned with at least enough success to demonstrate the usefulness of this new and valuable material.

Others are credited with making the attempt at a much earlier date, but it is generally admitted by writers on the subject, that the introduction of artificial teeth of porcelain dates from the united efforts of the above-named gentlemen.

The earlier efforts seem to have been directed more to the purpose of constructing a plate and teeth in one piece. The shrinkage in baking rendered this most difficult and led to the teeth being made separately, to be afterwards attached to metal or other plates.

It was not long, however, before "mineral teeth" (as they were called) were made to be grafted upon the remaining natural roots. They were not very successful, however, at first, being clumsy, poorly shaped, and the dowel holes were very imperfectly formed. Their smooth vitrified surfaces failed to grasp the dowel as firmly as did the old natural crown or ivory substitute. The mineral substitute being deficient in strength, would split as a result of the expansion of the dowel from the absorption of moisture.

These teeth were not formed in closed moulds as they now are, but the face only was moulded, the back or lingual surface being moulded by manipulation. They were simply blocks of porcelain rudely fashioned to resemble the teeth which they were destined to represent, and required a great deal of grinding in adjusting. In addition to this the porcelain was opaque, uniform in color and lacked the translucent life-like appearance with which we are now so familiar.

The progress was slow, but the opening wedge had been set and only waited for the ingenuity and perseverance of Samuel Stockton (the father of dental manufacturing in this country) to drive it home. He began in 1830 the manufacture of porcelain teeth of a more desirable character. The dowel hole was larger, deeper, better formed and more conveniently placed. These features, combined with their superior strength, made them a general favorite, and operations performed with them were more permanent than like operations done with like crowns of the present day.

So it is seen that this branch of the art preservative is not new, as the public is led to believe, but one of the oldest in the list of operations upon the human teeth.

ENERGY!

BY D. V. BEACOCK, BROCKVILLE, CANADA.

When we speak of this little word of only six letters, do we ever stop to think of the possibilities that enter into its meaning? Energy is strictly defined as the power of doing work, and is one or other of two kinds—potential or kinetic. For example, a raised weight, a wound-up spring, gunpowder, and the food of animals, are all instances of stores of potential energy. A missile in motion, wind, heat, and electric currents are instances of kinetic energy. On the other hand, sound, light, and other forms of wave-motion, are examples of mixed potential and kinetic energy. With energy is connected the idea of activity; with force, that of capability. Force is equivalent to aggregative power. Energy is equivalent to separative power. Energy was primordially a mere statical separation of masses, molecules, atoms, or electrical units. If there had been no such power as force, every one of these bodies would have remained forever apart. The dentist expends a certain amount of his energy in forcing and condensing the molecules of gold into the cavity of a tooth, swaging-up a metallic plate, etc. Then we say a man is full of energy; that is, he is full of the power of doing work, and we say a thing is full of energy when we mean that it is full of the power of doing work, and we estimate the energy which it possesses by the intensity of the opposing force which it overcomes, multiplied into the distance through which it can travel before that energy is exhausted. For instance, take any kind of clock-work, wind it up, you have expended a certain amount of your actual, kinetic, or in other words dynamic energy. Now the energy of position, commonly known as potential or statical energy, possessed by the elastic force residing in the spring, is actually the amount of work which yourself expended in winding it up, and what is more, this spring is just capable of doing the same amount of work done by you, no more, no less. So you see that no energy has been either created or destroyed, all that has taken place is the energy has been changed in form. We can understand from this what is meant by the term "conservation of energy," which simply means that the amount of energy in the universe is a fixed quantity, is constant, and like matter, cannot either be increased or diminished, but only changed in kind, as into heat, light, sound, etc.

The modern theory of energy contemplates its *conservation*, *transformation* and *dissipation.* The transformation of energy, or correlation of forces of energy, is a statement of the experimental fact that one form of energy may in general be transformed wholly or partially into any other form, but is subject to the condition derived from the first fact, that the portion transformed retains its amount unchanged. It is, however, subject to the law of *dissipation* or degradation, that is energy generally tends at every transformation into heat, and in that form tends to a state of uniform distribution. All the energy of the universe, from the beginning, being in a state of ceaseless transformation, has been in a great measure frittered down into heat, and in the course of time, will take wholly that form. Thus we see that in every case all energy tends to be lost by ponderable matter and transferred to the *etherial medium.*

One may here be inclined to ask, is there no energy created in the case of the electric dynamo, the windmill or the steam-engine, or even the muscular exertion of men or animals. The simple answer is, that in no case whatever, either in animal or in any mechanical contrivance, is there any force or energy created. But on the other hand all the different forms of energy can either directly or indirectly be transformed into heat, and what is heat but a form of motion, and there are only two sources of heat, viz, chemical combination and mechanical force. All movement in the universe necessitates the expenditure of energy, therefore motion is, in one sense, the cause of everything. There is no such thing as rest, for we can neither do nor obtain anything without expenditure of labor, that is a transforming of one kind of energy into some other kind; every thought that passes through our minds, every effort that guides our pen, is brought about by the molecular energy of the brain and muscle cells.

Nature says, for a certain amount of work, or one kind of energy, I will give you so much of another kind; mark you, neither more nor less—nature rules with strict justice—but remember there is no cheating her. The whole of our lives consists in transforming these two different kinds of energy. We eat food, the greater portion of which, under chemical, physiological and biological action (Metabolism) of the different fluids of the digestive system, which enables us to execute a certain amount of work, that is to transform a certain amount of potential into kinetic energy.

This is well illustrated by the increased diet necessary when either man or animal changes from a state of inactivity to one of hard, laborious work. Thus for a certain amount of work done, a certain amount of food must be consumed and assimilated, that is properly digested, hence the value of a good set of teeth and good digestive apparatus. When the expenditure and absorption are equal, we are said to be in a state of physiological equilibrium, good health. From the above it will readily be seen that it is the combustion of the food taken into our system that furnishes the energy of our bodies.

Now the question may naturally be asked, whence is all this energy derived? The obvious answer is, in every case, from the sun, for if the food be vegetable, it contains the stored-up energy of the sun's rays; if it be animal food, the animals themselves have derived their substance ultimately from the vegetable world; it has simply passed through another digestive apparatus, and consequently raised the complex substance of dead protoplasm to a higher power before being consumed by us. Therefore the chain of evidence is complete which traces back all the muscular power of the world to the energy of the sun's rays.

For if we take a glance at that endless series of compounds, beginning with carbonic acid, water and ammonia, the sources of the nutrition of all plant-life, and includes the more complex constituents of the animal brain, we find there is no blank, no interruption, for the first substance capable of affording nutriment to animal life, is the last product of creative energy of vegetable or plant-life. Hence the animal organism may be said to be only a higher kind of vegetable, the development of which only begins with those substances with the production of which the life of an ordinary vegetable ends. Again, without the sun's rays there would be no plant-life, the stored-up or potential energy in the seed is warmed into life by the solar rays till its tiny rootlets and spongicles are capable of obtaining nourishment from the inorganic elements, carbonic acid, water and ammonia, which by a wonderful chemical feat, a resident force, inherent in all plants, and by the aid of the green coloring matter (Chlorophyll), under the influence of sunlight, has the marvelous power of decomposing carbonic acid, setting free the oxygen and laying hold of the carbon it contains. In this way is the solar rays of the sun stored up in the form of plant-life for the use of the higher order of animal life. Even our immense coal-beds were once all a forest of plant life, consisting of club-mosses, sigillaria and tree-ferns, which have been converted into coal for the use of following generations. The earth's forests and coal-fields, on the one hand, and her atmospheric oxygen, on the other, constitutes the earth's store of molecular energy for man—her capital, so to speak—stored up for his use; and strange to say, man is doing his utmost to use up as rapidly as possible, *dissipating* it into *ethereal space.*

The essential character of vegetable life is the exhalation of oxygen, which is effected through the agency of light. Animals on the contrary, derive all their nourishment either directly or indirectly from plants. They get rid of the superfluous hydrogen and carbon and accumulate nitrogen. The relations of plants and animals to the atmosphere are therefore inverse. The plant withdraws water and carbonic acid from the atmosphere, the animal contributes both to it. Plants are essentially characterized by their manufacturing capacity, that is by their power of working up mere mineral matters into complex compounds.

The vegetable world, born of the atmosphere, consists of condensed gases. The animal world, derived from the vegetable, is also but solidified air. So the clothes we wear, the food we consume, the houses in which we live. The fuel that warms us—that transports us to distant places with lightning speed, and labors for us in ten thousand different ways, are all nothing but condensed air, and we owe it all to the sunbeam, the great agent of condensation, which has made the organic world such a vast magazine of solar force.

The sun, therefore, is the motive power of the world. From it is the earth warmed, illumined, magnetized, and vivified, in the roar of the cataract, in the fall of the avalanche, in the crash of thunder, the glare of lightning and the sweep of tornadoes, in the silent growth of plants, the beauty of flowers, and the elastic spring of animals, in the steamship or flying train, or the rapid click of the telegraph, we behold the transmuted power of the *all-energizing* sun. The simple leaf and humble blade of grass, under the powerful solar rays, is able to perform what *no chemist* has ever been able to accomplish, for they decompose carbonic acid *at common temperatures*, and retaining the carbon and setting the oxygen free. While the chemist requires for the same purpose the double action of a *very high heat* and the most powerful affinity, so powerfully are the elements of carbonic acid held in combination.

The energy derived from fuel, that is wood and coal, both produced by the sun, whose rays decompose the carbonic acid in the leaves of plants, sets free the oxygen, while the carbon was used for the building up of the woody fibre of the plant. So too with coal, which is only wood in another form. Their source of energy lies of course in the fact of the re-combination of the atoms of carbon and of the oxygen of the air, caused by combustion. No fresh energy is being created by the earth. Man too, like the earth, creates nothing—neither matter nor force. No man ever made or created anything, he only shaped and brought together or separated natural things already existing.

Solar energy also acts as a *liberating* agent. It wears down cliffs, mountains and table-lands, it melts the ice and snow on the mountains, it sets the animal to devour the plant; it drives man to dig and burn coal and petroleum; it overthrows the building he has piled, it rusts his iron implements, it corrodes his chemical re-agents. In one way or another all the energy of the earth's own primitive separation, and all intercepted energy of the sun's primitive separation, go together to swell the energy of the *ether, the great waste-heap of the universe.*

Prof. Huxley says: "For all we know to the contrary, all the chief known constituents of the earth's crust, may at some time have formed part of living bodies; that they may be the ash of protoplasm. It is at present a perfectly tenable hypothesis that all silicious and calcareous rock are either directly or indirectly derived from material which has, at one time or other, formed part of the organized frame-work of *living organisms.* Just as silicious deposits may be metamorphosed into opal or quartzite, and chalk into marble, so known metamorphic agencies may metamorphose clay into schist, clay-slate, slate, gneiss, or even granite."

By far the greater portion of the earth's crust has long since parted with its energy. Granite, limestone, etc., as dynamic agents, or as a source of power to man, have been dead for ages; their atoms having rushed together in chemical union and given up their molecular energy.

In conclusion, we are dependent upon the sun and centre of our system, not only for the mere energy of our frames, but also for the delicacy of our construction. The future of our race depends on the sun's future, but even the sun must have had a beginning, and it is the belief of many eminent astronomers and physicists, that he must have an end, and become burned out. However, this generation need not despair, as we will not live to witness it, for it may be millions of years before this occurs.

Be this as it may, no scientific truth stands upon a firmer basis than this principle known as the "conservation of energy." For toward no other principle has so much ingenuity on the part of man, from time immemorial, been so fruitlessly directed. This principle of the conservation of energy simply states that, no matter what agents may be called into play, nor how much ingenuity expended on the part of man, perpetual motion, or the creation of force or energy, is utterly impossible.

ELECTRICITY.

BY M. G. J.

The possibilities and applications of that wonderful agent known as electricity are so wide, even at the present time, that to attempt to cover the field in general would fill volumes; and each year sees this widening more and more. I shall not attempt to touch upon the technical part of the subject, but shall confine myself to a few of the various means by which it can be brought to our use in the dental office, giving more of my own experience on points which have been of use and interest to myself. The agent itself being generated by chemical action or by means of dynamos which we shall employ and how we shall apply it must be governed largely by our surroundings. The most convenient and satisfactory method I have found to be that from some regular outside current coming from a central station. This is always the same, and avoids the unpleasant use of chemicals around the office. Where this can not be obtained, probably the most satisfactory means is the use of a storage battery. This can be kept supplied from some simple battery arranged in another part of the office or building, by wires brought through to the storage battery itself and keeping its power up to standard at all times.

Those who have tried this means claim it is very satisfactory. A storage battery can also be charged just as readily from the outside current, if so desired. The use of some of the strong acid batteries which have been placed upon the market for office use I consider as nearly always unsatisfactory and undesirable. They are usually disagreeable to keep in order, very injurious if spilled on the carpet or surrounding furniture, and are almost certain to be out of order at some critical point, so that for our use I should discard them entirely. In the various applications which we make, it is, of course, often desirable to have different strength of current. For this purpose we need some form of rheostat; to control or modify the current. One point of interest to all dentists is to obtain an efficient and practical motor. Many of those that have been put on the market are far from desirable, but each year is showing us some improvements and advancements, and before long I hope to see one that is perfect in all respects. The principles in all are naturally about the same. The question is, how the application is made. When it is necessary to have artificial light there is nothing that answers our purpose better for whiteness and evenness than that furnished by electricity. As used in the small mouth lamps, it is also very desirable, enabling us to thoroughly illuminate the most obscure cavity, and is a great aid in examination of the mouth and diagnosis of some conditions of the antrum, where free openings can be had. It can also be used to advantage in the various specialties in the medical profession, and is coming more and more into use in the treatment of the throat, ear, etc. There are many times in our work, as well as with other specialists, that the use of the cautery is desired. For this purpose there are various forms of knives and loops, and many more can be made if the principle of heat from electricity is only kept in mind; that is, that it is generated by throwing a resistance into the current. All our lights, cauteries, etc. being constructed on this plan.

The treatment of hypertrophied gums by electrolysis is often efficient and rapid, this method being used in various branches of the medical profession for the removal of tumors, etc. The easiest way to do this in our case is to carry a needle from each pole into the opposite sides of the enlarged tissues, allowing the current to pass through it, breaking up the abnormal condition and restoring a healthy action. I have found one of the most efficient obtundents for sensitive dentine to be the *application of cocaine by means of an electrical current. My theory of the action is that the electricity acts as a carrying agent for the cocaine, thus producing deeper effects. When employed in this way it appears to produce no injurious action upon the pulp. The effect, however, can be carried

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*Method suggested by Dr. McGraw.

far enough so that the pulp can be removed with but little pain. The advantage of warm or hot air in drying the cavity or root canal is well known. Thus electricity furnishes one of the most satisfactory methods of employing it, either in the hot air syringe or with the broach for drying the canals; at the same time we can get the full germicide action of the application of heat. In a more general way the question of heating by electricity is receiving considerable attention. It can be applied in almost any way we desire. We could heat our office, warm water, or do almost anything in this line with the current that we now employ to operate our motor. In the application of the various medicines, we find another point of advantage, for where applied by means of an electrode a much deeper and more efficient action can be obtained. For pathological work its scope is by no means limited. One very valuable point is its power to control hemorrhage. Cases that will yield to no other means can be controlled by the application of the electrode direct to the wound or injury and the positive current applied long enough to produce coagulation but not cauterization.

In the employment of these means we must not lose sight of the idiosyncrasies of some of our patients. Many of them have a great dread of the mere name of electricity and are easily frightened by its use in any form. Others you will find who are unpleasantly affected by it where it is employed. The different symptoms and conditions being quite various. These little peculiarities we must take into consideration for our own welfare and for those who are placed under our care, but properly employed and applied we find electricity one of the most useful agents to aid us in our every day professional life.

DENTISTRY IS A SPECIALTY IN, OR BRANCH OF MEDICINE.*

BY H. L. AMBLER, D.D.S., M.D., CLEVELAND, O.

We affirm that dentistry is a specialty of medicine, with a good deal of emphasis on the *specialty*. Now let us proceed with the argument and produce our logical proof. A branch is part of a body or system; medicine as broadly understood means treatment of the whole body; the organs which dentists treat are a part of the body, therefore dentistry is a part or branch of medicine. A dentist must comprehend dental anatomy, dental physiology and dental materia medica; it can hardly be denied that these studies, minus the word dental, belong to general medicine, and as the dentist appropriates a portion of them, more or less, thus does he become, to the extent of the approximation, a practitioner of these branches of medicine. Dentistry is closely connected with medicine and is indebted to it for many things. A dentist did not write Wood's Anatomy, neither was he the first to dissect the fifth pair of nerves, nor did he write a standard physiology, and his knowledge of pathology was first gained from a medical work; these are essentials in the study and practice of medicine and we certainly use a part of them. It is imperative that we should understand about circulation, respiration, nervation, etc., and if we prepare ourselves with sufficient knowledge, there is no difficulty about our being in and of the noble profession of medicine. By continually calling ours a separate profession and not a branch of medicine, we create a tendency to keep medicine and dentistry from assisting each other as much as they ought to. Just as soon as we can convince the whole public that we are working on as much of a scientific basis in our line, as the physician and surgeon are in theirs, then we shall have gained a great vantage point, then they will say: our dentist is just as successful in remedying or curing the ills we present to him, as our physician is in alleviating other difficulties. Physicians could not avoid recognizing us as their peers, if we took the degree of M.D., and afterwards studied dentistry and obtained the D.D.S., thus they could not help putting us on an equality with those who have taken the M.D., and by further study are now practicing opthalmology, otology, etc., and that is the reason why some physicians do not consider us on a par with them. But there is another class who imagine that their profession is more ancient than ours, and that they would be condescending too much if they gave full recognition to such a modern calling as dentistry. Now it is barely possible that they may be laboring under a misapprehension as to the ancientness of dentistry. Let us note a few historical facts in regard to this point: 350 years before the christian era Aristotle, that superior genius, whose anatomical knowledge was so extraordinary for the age in which he lived, devoted much of his time to the consideration of the teeth, and with the exception of Hippocrates, was the first writer that treated of them in an *extended* and *philosophical* manner.

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* Read before the Cleveland Dental Society, Nov., 1894.

Alexandria was founded 332 B. C., and here lived Galen who wrote about the teeth, and in 400 B.C. Hippocrates, who was a lineal descendent of Esculapius, says that when he visited Egypt he found medical, optical and dental schools. The great Egyptologist, Ebers, has proven that in the Egyptian medical schools they had special teachers of dentistry more than 3000 years ago; thus the light of history teaches us that the ancients regarded dentistry as a specialty of medicine.

It seems as if the above facts would be sufficient to change the preconceived opinion of anybody in regard to the age of dentistry.

"Man ever since the creation has been subjected to disease, and that necessity which has ever been the mother of invention and discovery, must have early taught him to use some means for its alleviation or cure, rough and uncouth perhaps, still in a measure answering his purpose. Thus we find ancient writers referring to the practice of dentistry as being coeval with the birth of medicine."

The Royal College of Surgeons in London and Edinburg, has a dental department, and ten of the largest hospitals have dental dispensaries connected with them. Our Prof. W. D. Miller, formerly of Ohio, now of Berlin, says: "Physicians as well as dentists have recognized the fact that medicine meets upon common grounds with dentistry, and that it would be as impossible to separate medicine from dentistry as to separate the mouth from the alimentary tract."

In 1825, Dr. Hayden of Baltimore, lectured on dentistry before the medical class of the University of Maryland, not with the intention of making dentists, but to give them a general knowledge of the diseases of the teeth and oral cavity. This method was adopted in several places, among them St. Louis 1864, Cleveland 1868, Cincinnati, Toledo, Chicago, and Iowa University.

Dr. C. M. Wright says: "The science of dentistry is part of the science of medicine. I wish to say this distinctly and dogmatically. It is a fact not affected by the disputes ol doctors or dentists. The science of dentistry is a branch of the science of medicine in its broadest signification; it springs from the same root; it is nourished from the same fluid that circulates in the parent trunk and all the other branches."

The following is an article from the constitution of a dental society: Dental surgery is a specialty in medical science. Physicians and dentists should both bear this in mind. The dentist is professionally limited to diseases of the dental organs, and mouth. With these he should be more familiar than the general practitioner is expected to be; and while he recognizes the superiority of the physician in regard to diseases of the general system, the latter is under equal obligations to respect his higher attainments in his specialty. Where this principle governs, there can be no conflict, or even diversity of professional interests.

Dr. John S. Marshall says: "That knowledge proved and classified becomes science, and the sciences underlie the intelligent practice of all professions; consequently, to be educated for a profession means that you shall have knowledge of those sciences upon which it is based and upon which it must depend for its intelligent practice. You must begin at the very foundation stones, and step by step go over every principle taught until you arrive at a correct understanding of their application and their individual and mutual relationships and dependencies."

Medical graduates adopted dentistry as their vocation in the early part of American history, thus giving their sanction, in both theory and practice, that dentistry was a specialty in meditine, and many M. D.'s who had a practice gave it up and engaged in dentistry.

Years ago the International Medical Congress establised a section on Dental Science, and the American Medical Association established a section on Oral Surgery which was conducted by dentists. Do these facts lead you to believe that we are *not* recognized as a specialty of medicine by the highest medical bodies? Scientific ideas, feelings and actions, are what will tell in our favor. To attain the degree of D. D. S. we require three or four years of study; to obtain the degree of M.D., the medical schools require the same length of time. Is that not an even thing as far as schooling is concerned? Many dental schools are raising their standards, and also length of terms, these both help to give us a good reputation and will assist in demonstrating that we are a very necessary specialty of medicine. If we are not scientific specialists, why do professional gentlemen come themselves and bring their families for our services? If we can by work, study, science and art, be well established as a specialty of medicine, a broader field for usefulness will be opened to the incoming dentists. Some claim that dentistry is merely a mechanical art, therefore dentists are not entitled to professional recognition by the M. D.'s. Does not the surgeon with an active mind, invent or use any mechanical appliances? Does not the oculist, aurist, gynecologist do the same? Then their practice certainly consists partly of a mechanical art, joined with a knowledge of the organ upon which they are operating, and also a general knowledge of the whole anatomy. Does not the dentist who is educated in our colleges to-day, have a good comprehension of the organ he is operating upon, and also a fair general knowledge of the human system? This being a fact, can you tell me why one is a profession and the other is not? And in what way is the oculist, aurist, etc., any better prepared to practice his profession or specialty, than the dentist is his? Who invents, applies and uses every day more instruments than the busy surgeon? Of course dentistry is unlike any other specialty of medicine and all other specialties of medicine are unlike each other, they naturally must be otherwise or there would be no specialists. So the argument that dentistry is unlike any other specialty and therefore should not be recognized as a specialty of medicine, is fallacious and misleading. It seems strange that in this day and age of the world, that anybody dares to claim that dentistry is not a branch of the healing art. Are not dentists studying anatomy, physiology and therapeutics? We know it to be a fact that they have been for years, and are doing so now. Then why are they in their department, not healers just as much as anybody? In 1890, Mr. Porter, the superintendent of the census bureau, classified dentists as manufacturers, and instructed his agents to collect statistics from them. A committee of the American Dental Association waited upon him and insisted that they represented a *profession*, and would not make returns as mechanics. After parleying for some time, Mr. Robert P. Porter *said* he would remedy the matter, then they politely invited him to sign a statement, which he did, before the full committee, that he would withdraw his former instructions to agents. These are historical facts; see report of American Dental Association for 1892. A republican senator—wish we knew his name, so as to send him a medal—said "That if the bill to classify dentists as mechanics and manufacturers, and collect statistics from them, came before the senate, he would move its reference to the judiciary committee, on the ground of its being unconstitutional." Now who says we are not professional? Have not dentists as a class as good a conception of the dental organs, their functions and pathological conditions, as a physician or surgeon has of the organs he treats? Most emphatically they have, and when you come to write and talk about quacks, neither party can cast any stones, and when you take into consideration the systematic control of colleges and interchange of students, we believe the dental colleges have a method which is difficult to surpass. Can the unprejudiced eye gaze upon what Garretson is doing in oral and facial surgery, or upon what Bonwill is doing with a dental engine in brain and maxillary surgery, performing operations within the mouth, that before scarred the face with unsightly blotches, and then say we are not professional, not a branch in medicine and surgery? Is the general surgeon any more certain of his diagnosis or prognosis than the dental surgeon is of his? Horace Wells, a dentist, gave the world the most benificent gift of anesthesia.

A national celebration of the fiftieth anniversary of the discovery of the anesthetic properties of nitrous oxide by Dr. Horace Wells, a dentist of Hartford, Conn., will be held in Philadelphia, on Dec. 11, 1894. Many leading dentists throughout the country have contributed towards the purchase of a memorial tablet to be erected in Hartford, which will contain a likeness of Dr. Wells and a brief history of his wonderful discovery.

Have we not a Miller, one of the great original investigators, who has been honored with a chair in the University of Berlin? an honor which no other American ever received; he must be regarded as fully belonging to a branch of the healing art, or he never could have attained this climax.

An English surgeon recently said: "The art of the surgeon to some extent is allied to the art of workers in wood and iron, and may be called mechanical. The art of the application of tools is worthy of being taught, and the surgeon should not use a saw, chisel, or trephine for the first time on a living human bone, and it would be well if those who have much to do with apparatus, knew the qualities of the metals and other materials they employ, and the ways of jointing, welding and molding them to meet desired ends. It would be good for most surgeons to spend a month or two in a mechanic's shop under the severe discipline of a skilled workman."

In orthopedic surgery, the mechanical appliances are numerous and many of them very ingenious. These statements add further evidence to those already given, that some acknowledged specialties in medicine have more or less of mechanical art connected with them. Then surely dentistry cannot be excluded as a specialty in medicine because it is partly mechanical. The eminent German pathologist, Carl Wedl, says: "That dentistry is a step-child of surgery."

During the past year five new volumes have been added to our science and art, by dental authors, and 2,600 students have been in actual attendance at our 44 colleges.

The road the dentist takes diverges to a certain extent from that of the physician, and so does the road of the oculist and aurist diverge from the practice and knowledge of the general practitioner of medicine. There are some physicians who think dentistry is a very close neighbor, to say the least, or they would not invite dentists to read papers before medical societies, and it also looks as if a large number of dentists regarded their calling as a special branch of medicine. If not, why did they advocate and assist in establishing dental sections in the International and American Medical Associations? Some of the papers and discussions in both of these bodies are of interest to every dentist. The advance of dentistry to a higher scientific standpoint can be accomplished by original investigations, and by studying medical branches more and for a longer period. The broad work of the dentist will still go on, in mechanics, ceramics, surgery, pathology and therapeutics, as the field opens wider at every forward step, and its breadth and depth are not realized by many laymen, but we know that a constant effort is required to keep abreast of all the improvements. The dentist who has been educated to and does administer drugs for the relief or cure of disease, is practicing medicine to a certain extent.

The sciences which form the foundation of specialties, such as dentistry, obstetricy, ovariotomy, ophthalmology and otology, all take their rise from a knowledge of human anatomy. The term medicine, in its broad signification, is applied to the whole healing art, but as commonly understood, medical practice means the practice of a physician, and as such is only one branch of the healing art; and reasoning from the same premises, dentistry is another branch, and dental surgery is a branch of surgery. Dental colleges teach several sciences which are taught in medical colleges; this fact adding to our argument that dentistry is a portion, or has taken a part of medicine. If they were not very closely connected, why do dental colleges teach anatomy, physiology, chemistry, etc.? These studies have always been acknowledged as the root and ground work of medicine and cannot be separated from that science. A great many years ago Dr. Oliver Wendell Holmes, who graduated at Harvard in 1829, said that the dental profession had achieved success, and won its place in the estimation of the intelligent public, before dentists were asked to share the labors and dignities of the faculties which belong to Harvard College; also that dentistry was an honorable special branch of medicine, and that he had seen a great many medical journals with broad title page, but with a vastly narrower table of contents than the *Dental Cosmos.* The province of dentistry rivals medicine in the intelligence and activity of those who teach and practice it, and in one respect is of greater public interest than some other branches; most children's teeth require attention, but their eyes, in the majority of cases, take tolerable care of themselves, but there are about twelve times as many dentists as oculists. If every person had twenty eyes early in life, and thirty-two when fully grown, then the number of dentists and oculists might be more nearly equal. Dentistry is now an accepted province of the great and beneficent calling, medical science and art. This is the opinion, the calm judgment, of one of the most brilliant and learned poets, philosophers and doctors of our century. Who had a broader, more cultivated mind, greater perception, a more progressive spirit in touch with all humanity, or a keener, far-seeing judgment than he?

AMERICAN DENTAL ASSOCIATION.

Reported for Ohio Dental Journal by Mrs. J. M. Walker.

Continued from page 506.

NOMENCLATURE.

Dr. S. H. Guilford, Secretary of Section II, read a report on *Nomenclature*, of which an abstract follows:

He said, This subject has never received the attention which its importance demands. While we claim that our profession combines both science and art, yet we lack the most essential requisite of a science, viz: Exactness of expression. The whole literature of dentistry teems with examples of words used interchangeably which vary greatly in shades of meaning, while others not infrequently fail to convey the meaning intended.

We do not find this so in any other science. In the so-called exact sciences—mathematics, chemistry, astronomy, as well as engineering, navigation, etc., each in part, factor, manifestation or act has its single and appropriate designation. Were this not so confusion would result, and sometimes disastrously. In our haste and anxiety to further the material interests of our profession, we have in a large measure overlooked the character of the foundations on which we have been building. We can never lay just claim to being scientific until we have a vocabulary suited to our needs and which will enable us to express our ideas correctly and without danger of misunderstanding or confusion. Reports more or less satisfactory, on this subject have been presented to our societies from time to time, individual members of the profession have also defined a nomenclature of their own and offered it for adoption. If the college faculties would all adopt a uniform system and teach it in the schools, good results would follow. But each system offered differs from all others, with individual peculiarities which instead of simplifying and systematizing our terminology only add to the confusion.

In view of these facts and the unquestionable importance of the subject, the Section recommends that steps be taken by the Association to have prepared an intelligible, correct and systematic nomenclature, which by its inherent merits shall commend itself to the profession in general and be universally adopted. The section was of the opinion that this end can be attained by appointing special committees selected from the men specially interested in each department, whose duty it shall be to carefully and studiously prepare in terminology, accurate and yet simple enough to be readily comprehended. The work would be arduous and long, but the results would be of incalculable value. The section also recommended that the system of dental notation given to the profession by Dr. Corydon Palmer some years ago, consisting in the use of arabic numerals to indicate the permanent teeth and roman numbers for the deciduous teeth, combined with horizontal and perpendicular lines to specify the arch and the side of the median line, be adopted by the Association.

On motion of Dr. B. Holly Smith, a permanent committee on terminology, as recommended by Section II was appointed, as follows:

Drs. S. H. Guilford, L. Ottofy, M. S. Rhein, Thos. Weeks, L. D. Shepard, Grant Molyneaux, D. R. Stubblefield, and A. H. Thompson. This committee is expected to report progress annually and be continued from year to year. The adoption of the system of notation of Dr. Corydon Palmer was refused to this committee.

Dr. Guilford also read a paper by Dr. M. L. Rhein, entitled

THE ETIOLOGICAL CLASSIFICATION OF PYORRHEA ALVEOLARIS.

He said,—Various forms of pericemental inflammation with purulent discharge at the gingival border have afforded points of dispute for years. The etiology, pathology and treatment of this disorder will furnish a field for *battle royal* at our meetings, until science shall have vanquished this destroyer of the dental organs. The names given to this disease are as varied as its manifestations.

The name "*Rigg's Disease*" was bestowed upon it in honor of the man who first called the attention of the profession to the feasibility of combatting its ravages.

The name *Pyorrhea Alveolaris* has a strong foothold and it would be as easy to eliminate the word *dyspepsia* from the nomenclature of the medical profession as *pyorrhea alveolaris* from that of dentistry. But although this name only expresses the clinical feature of a flow of pus from the alveolus at the gingival border, it has been used indiscriminately to express the most severe and complicated forms of the disease in question as well as the simple and uncomplicated.

To obviate this difficulty would be to remove one source of contention and leave time for the investigation of more important matters.

Dr. Rhein submitted a plan of etiological classification of various phases of the disease, retaining the name Pyorrhea Alveolaris as generally descriptive of any condition where pus flows from the alveolar borders, but classifying the various forms of the disease. He would first make the two grand divisions of—

I. Pyorrhea Simplex.
II. Pyorrhea Complex.

I. PYORRHEA SIMPLEX would include all cases of purely local origin and caused by local means. Lack of hygienic conditions, unsanitary conditions are at all times the sole causes of a purulent discharge. This is purely local and yields to local treatment. In other cases malnutrition—a poverty of life-endowing corpuscles plays an important role.

II. PYORRHEA COMPLEX, by different writers called "true pyorrhea," "phagadenic pericementitis," "hæmatogenic calcic pericementitis," presenting numerous peculiar or obscure clinical features.

To the numerous subdivisions of this grand division, with its complex varieties, Dr. Rhein proposes to add a modifying word which shall indicate the etiology of each case after careful diagnosis.

Class A would include cases complicated with or due to gout, diabetes, chronic rheumatism, Bright's disease, scurvy, chlorosis, anæmia, lucæmia, pregnancy.

B. Cases having their inception during attacks of acute or infectious diseases, neurasthenia, hysteria.

D. From the toxic effects of drugs as mercury, lead, iodine.

E. *Pyorrhea sequentia*, arising after the prime cause of disease has been removed.

For each of these classes a compound term, such as "gouty pyorrhea," "mercurial pyorrhea," "tuberculous pyorrhea," etc., would be clearly understood, indicating the pathology and treatment of the case in concise manner without the interjection of any irrelevent matter.

(To be continued.)

SOUTHERN DENTAL ASSOCIATION.

Reported for the OHIO DENTAL JOURNAL by Mrs. J. M. Walker.

Continued from page 521.

OPERATIVE DENTISTRY.

When this section was called, DR. E. P. BEADLES, Danville, Virginia, read a paper entitled :

ANTERIOR FILLINGS,

of which a brief synopsis follows :

The paper was limited to the four upper incisors and the two cuspids, with reference to the operator himself, the preparation of the cavity, and the introduction of the filling material. The proper position for the operator was first considered. No operator, no matter how expert, can perform good work in a cramped, awkward or fatigueing position. To be the least tiresome, his position must be a perfectly natural one; the back bent, or the head twisted to one side will soon bring fatigue and the best results will not be attained. Dr. Beadles considers the proper positions for the operator, in operating upon the anterior teeth (and with slight modifications it is true for all the teeth), to be an upright position, standing to the side and partially behind the patient, with the head bent slightly forward. To this position the mouth mirror is an indispensable adjunct. In proof of the correctness of this method Dr. Beadles says: "I never had a headache in my life."

Dr. Beadles was especially emphatic in commending the constant use of the mouth mirror as an adjunct to the comfort of both operator and patient. In the preparation of the cavity, he said: Do not mutilate the teeth; nature knows best, and no man has yet improved upon her forms. Do not use rubber wedges for separating; don't use separators with too long a lever. All the space needed is room enough to polish the filling after its insertion, and if you have not this, wedge in a small piece of dry cotton, not too tight, and dismiss the patient until the next day, when there will be ample room. Cut away all the enamel wall on the lingual side, exposing the entire cavity to the eye as reflected in the mirror. The shape of the cavity when ready for the reception of the gold should be that of a cube or square with rounded corners; sometimes a slight groove is required in the cervical wall for the reception of the first piece of gold which should be non-cohesive always. The sides should be as nearly parallel as possible, no undercuts, no pits or retaining points. Fill over-full the groove mentioned, condense well over the cervical margin and burnish then and there. By doing this you have the margin safe and need not interfere with it again. From this point on, Dr. Beadles generally uses cohesive gold, rolling the gold between the fingers, annealing and cutting into pellets the desired size. Keep the proximal wall well burnished as you proceed, and you have finally only to polish with fine sand-paper disk finishing with use of cuttle-fish.

For instruments Dr. Beadles requires only one small, straight, round pointed, steel-handled plugger, one flat-pointed and one or two right angled, round-pointed, ebony-handled pluggers. When packing against the wall use smooth points, though serrated points may be used in the body of the filling if desired. Don't pound and hammer the gold too much, which only weakens it, and when the cavity is filled *stop*. Don't build on gold simply to grind it off again. Using hand pressure, very frail walls can be built against with safety. Dr. Beadles affirmed his strong faith in hand-pressure. More force can be used as the pressure is steady and gradual, and no mechanical invention can improve upon the human hand. In many cases a cavity in the anterior teeth can be nearly filled with cement, pressing annealed gold into the soft cement, waiting for the cement to harden before finishing the filling. Amalgam may also be found desirable in a few cases, facing the labial surface with gold.

Dr. T. W. Foster, Dacatur, Ala.. next read a paper entitled:

SOME OF THE MERITS OF A CONTOUR FILLING MADE IN THE LABORATORY.

No matter what the operation may be, it is the duty of the operator to consider the welfare of the patient, not only in the use of the best material and his highest manipulative skill, but also to adopt the method calculated to give the least pain and discomfort to the patient. Failure in this respect makes the dental profession responsible for the universal apprehension experienced in contemplating a visit to the dentist. In view of this fact Dr. Foster wished to call attention to the merits of fillings *made in the laboratory* for large contour work. The case described in the paper was illustrated by a diagram showing the mesial corners of the superior central incisors broken off from the gingival margin of the mesial surface diagonally across to the angle of the distal surface. The patient was a machinist and the teeth had been thus broken off by a blow from the handle of an iron maul. As a rule, in such cases, Dr. Foster would have removed the pulp and the remaining portions of the crown and replaced with Richmond or Logan crowns, but the patient, as is often the case, revolted at the idea of "artificial teeth," and would have nothing but gold fillings. To satisfy him, the right central was contoured in the usual way, the operation consuming three hours, both the patient and himself being worn out at the end of that time. In order to make it easier for both parties the left central was restored by a filling made in the laboratory, as follows: The enamel margins were beveled accurately and thin platinum burnished to the surface extending beyond the margin of the fracture. Through the platinum three holes were drilled at parallel angles in which were inserted platinum pins. The tooth was then contoured with wax from the labial surface, another piece of platinum was burnished adhering to the wax. The whole was then removed and invested, leaving the mesial surface exposed. The wax was burned out and the pocket filled with 22 k. gold solder, the investment removed, the piece finished and adjusted in little over an hour. The patient was delighted with the operation, so very easy for him and with the result also, and wanted to know why in the world he had not done the other tooth in the same way. Just before leaving home, Dr. Foster had examined the two fillings for comparison, and found that while the filling contoured at the chair was slightly pitted on the surface and the angle at the mesial corner slightly defaced, the "laboratory contour" was as perfect in every way as when it was inserted and had a much better *expression* than the "foil contour." While the final result is thus in every way satisfactory, the ease and facility of the work for both operator and patient commends itself to the consideration of all. For æsthetic results a porcelain-faced filling, as described by Evans, would, of course, be preferable, but much more difficult.

The papers of Drs. Beadles and Foster were opened for discussion.

Dr. Frank Abbott said that while many operations in the mouth were more or less painful, it was the duty of the operator to inflict as little pain as possible consistent with the proper performance of the operation. They are so easily rendered excessively painful by careless operating, but in order to encourage people to have their teeth cared for, as little pain as possible should be inflicted. It is exceedingly difficult in many cases to adjust the rubber dam without inflicting severe pain, and for this reason Dr. Abbott has abandoned its use except in extreme cases. It takes so much time and gives so much trouble and causes so much pain that its use is superseded in his practice by other means that occasion less pain, give less trouble and consume less time. Time wasted in accomplishing something unnecessary can never be made up again. In the use of obtunding material, twenty-five or thirty years ago, arsenic was almost universally applied in cases of sensitive dentine, and the result was numerous dead pulps, abscesses, etc. Now the country is flooded with all kinds of nostrums from all parts of the country. The *alkalies* are nature's natural obtundent.

The teeth are not naturally sensitive, but when inflamed under the action of the acids which cause decay, they become excessively sensitive. An alkali counteracting the acid restores the tissues to normal condition. Soda answers every demand and is usually harmless, but the patient must be put under regular treatment for some time, as follows: A teaspoonful of soda in a glass of water, using a little to rinse the mouth and hold in contact with the teeth twenty or thirty times a day. The second day the proportion of soda may be doubled. Then the soda may be placed directly in the cavities, and by the fourth day the teeth can usually be cut without pain. Very much of the pain attributed to dental operations is caused by bungling operators. There is everything in knowing just what you want to do and how to do it.

The question of the sensitiveness or non-sensitiveness of normal dentine was discussed at great length with the final conclusion, as stated by Dr. R. R. Freeman and Dr. Beech, that it is a question which can never be solved except theoretically, absolutely normal dentine being inaccessible. When exposed to tests through removal of its covering—the enamel—it is no longer normal.

Dr. Crawford criticized the use of platinum in contact with the dentine in Dr. Foster's "laboratory contour." He would use pure gold adapted to the walls with soft-wood points. Dr. Crawford objects seriously to the use of any two metals in a tooth, as platinum and gold in Dr. Foster's case, and especially the combination of metals in the amalgam alloys.

Dr. W. H. Morgan has had no experience with contour fillings made in the laboratory, but has found contour work done at the chair so satisfactory that he sees no means for changing his methods. He does not understand how or why such a filling as that in the right central could require over three hours' time or prove exhausting to either patient or operator. On one occasion he had a similar case except that it was necessary to fill the root also. Being a clinic "the boys held the watch on him," though he was not aware of the fact. The filling consumed six and a half sheets of No. 5 gold and was completed in fifty five minutes by the watch.

Dr. Foster: I did the best I could and I learned under you! Dr. Morgan objected to the dogmatic style of Dr. Beadles' paper as not being scientific. No set rules can be laid down to fit every case and every operator. He said: I have been filling teeth for many years, but I do not always use the mouth mirror. I have other use for my hands in many cases. Standing "perfectly erect at the side of and partly behind the patient" will not answer in every case. I want to look into the mouth and see what I am doing. I want to see the other end of my instrument, and there are many cases where I prefer to stand in front of the patient, and often at the left side. In regard to the rubber dam causing so much pain that it is better not to use it at all, I find that I inflict as little pain and inconvenience with as little trouble and time with the rubber dam as with anything that can be substituted for it. Neither can I endorse the rule of never using rubber wedges. There are cases where nothing else will do, though I always seek to inflict the minimum amount of pain. In some cases enough cotton cannot be inserted without crowding it up into the gum in the interdental space.

Neither is hand-pressure the one mode above all others. The true philosophy in these matters is to examine into all the conditions and be governed by the environments and not say, dogmatically, this way only and never any other. Much depends on the idiosyncrasies of the patient and every case must stand on its own merits. Dr. Morgan spoke of the various methods of obtunding sensitive dentine and commends the spray apparatus with ether, cooling the tooth until it is benumbed, but not continuing it too long, which causes excessive pain. The tooth is less sensitive if kept perfectly dry, and this is impossible without the use of the rubber dam, which, therefore, becomes a very important adjunct in lessening the pain caused by cutting the dentine. In regard to the general use of arsenic, as mentioned by Dr. Abbott, Dr. Morgan thinks it could only have been used by the ignorant class of practitioners, as even horse doctors have always been familiar with the effects of arsenic in causing slough of soft tissues, as used by them in curing fistula, etc. A very little particle of arsenic inserted in the fistula and closed in has sometimes caused diseased tissue "as big as your head" to slough out. Any dentist, except the very ignorant, must have known it would cause the death of the soft tissue in the tooth and beyond.

Dr. Friedrichs uses hand pressure in preference to mechanical. The rapid blow of the latter hardens and condenses only the surface of the gold, while hand pressure spreads it in all directions. His experience has been that the mallet is very objectionable to the patient, and unfavorable to the operation.

Dr. Cowardin thinks that the sensitiveness of dentine is due largely to individual idiosyncrasy and constitutional conditions. Patients of rheumatic and gouty diathesis suffer exquisitely from sensitive dentine. The dentine is abnormally sensitive from constitutional irritation.

Dr. Frank Holland does not see what the condition of the blood has to do with the condition of the dentine. If a patient is irritable from disease he will complain more, but that is no proof that he suffers more than another.

Dr. Barrett: Pain is the index to abnormal conditions. Normal tissues are not sensitive. There is no true nerve tissue in the dentine. The protoplasmic elements contain the elements of nerve and other tissues but normal dentine is utterly and entirely without sensation. The pulp itself in its normal condition is without sensation. How often do you not, in excavating a cavity, expose and touch the pulp and the patient is not cognizant of it, but if you allow it to remain exposed until it becomes inflamed, then it becomes exceedingly sensitive. Only when abnormal through irritation does it awaken to the power of conveying the sensation of pain.

Dr. Friedrichs: Is that a hypothesis, or can it be demonstrated?

Dr. Barrett: It is simply axiomatic and does not need demonstrating any more than that $2+2=4$.

Dr. Peirce does not agree with Dr. Barrett. Whether normal or not normal, terminal filaments are always sensitive. You cannot touch them without thus conveying an impression, though the degree of pain may vary. In the interzonal layer you will always get a response, at the border line passing from the enamel to the dentine.

Dr. R. R. Freeman to avoid the continued pain, day after day, caused by the use of separating rubber, wooden wedges, cotton, etc., uses the modern mechanical appliances known as *separators* with wonderful satisfaction both to himself and his patients. He said: Put on the separator and start the screws, look your patient in the eye and presently you will see a look come over the face that warns you to stop; let down a little, the patient will conclude "why that wasn't as bad as I thought;" then start it again, and you will easily get all the space you want, and it is all over at one sitting without prolonging the agony for days and perhaps a week. I began to use the rubber dam as soon as it was invented because I knew I would give less pain if I could keep the cavity dry, and it gives me the free use of both hands so that I can work to better advantage in every way. There are some irregular cases where these appliances will not fit and where neither rubber nor wood will answer, and then you must resort to cotton. Where it seems impossible to get anything in, that is where cotton works to the greatest advantage, roll a little particle of cotton fibers in a waxed silk ligament and you can draw it in between the teeth, tying it so that it will not work up to the gum, and the moisture will swell that little bit of cotton and give you the needed space. In some cases pain is a benign influence and is wanted as a warning, but there is no necessity for inflicting avoidable pain. Establish the confidence of your patients that you are not going to inflict unnecessary pain; make them feel that you are the captain who is going to carry them safely through, *and they won't suffer!*

Dr. Beach endorses Dr. Freeman's use of the separators. He does not believe in the slow process of wedging, with its prolonged pain. He knew from his own experience that even a little fiber of floss silk broken off between the teeth causes worry and irritation till he gets it out, and therefore he will not subject his patients to wedges of rubber, wood or cotton to remain between the teeth for several days. He spoke of his own experience with a duct-compressor, which theoretically promised to be something very nice. After having it used in his own mouth, he would never consent to use it on one of his patients though it might be very lovely as far as his own convenience was concerned.

Dr. Beadles, in closing the discussion, said that he had not intended to lay down any dogmatic rules for the governance of others. He had only desired to state the methods through which he had personally attained the greatest success, that possibly some might be benefited by the hints thus thrown out.

The subject of Operative Dentistry was passed at the close of this discussion, but at a subsequent session several voluntary essays were read which properly belong to this section.

Dr. W. V. B. Ames, Chicago, read a paper on a new cement which he calls

OXYPHOSPHATE OF COPPER

and which he considers invaluable in what may be called "desperate cases." It is compounded by mixing black oxide of copper, cupric oxide, with a solution of phosphoric acid. A phosphate of copper *per se* is formed which is held in solution in an excess of phosphoric acid. The cement is used in a plastic state and penetrates the tubuli of the dentine, exerting a positive embalming effect. It is insoluble in the fluids of the mouth after crystallization. It is contra-indicated for crown setting from its caustic nature, but is valuable for filling purposes where conditions admit. It cannot be used indiscriminately as it might cause an occasional devitalized and mummified pulp. Its permeation of the tubuli makes its use advantageous when it is impractical to thoroughly remove all of the semi-disorganized dentine. It arrests further destruction of that tissue and corrects the sensitiveness which renders further excavation impossible. Very sensitive cavities may be filled with no preparation beyond securing fairly good margins. After a few weeks they can be satisfactorily prepared for a more thorough operation. It is most satisfactory in stopping cavities in the temporary teeth, as it can be done after very indifferent preparation, which is a boon in the management of little patients, as the deciduous teeth can be preserved through their natural term by this means.

The fissures in the first permanent molars can be sealed up with this cement without putting the child to any discomfort, also in the treatment of those trying grooves and cavities in the buccal surfaces of molars and the sensitive place in the palatine surfaces caused by the contact of vulcanite or other plates. There is no necessity for anchorage in its use. Where there is a cavity below the gum line with a fungous growth filling the cavity, excise the fungous growth and place a gutta-percha filling against it until the surface is healed, and then fill with cupric phosphate.

The tissue will remain healthy in contact with the surface of this filling, as the cement presents a very smooth surface if not disturbed while crystallizing. It must be used in an almost fluid state; crystallization is hastened by projecting hot water upon the surface as it congeals. The moderate rubbing together of powder and fluid which suffices for the ordinary cements is not sufficient for this cupric phosphate. The powder is added directly to the liquid until a stiff mass is obtained; then with vigorous rubbing on a broad slab with a broad stiff spatula, the mass is reduced to a fairly watery state, the rubbing being continued till it is brought to an unctuous, creamy state, resembling oil-paint or printer's ink, which runs slowly from the spatula in a stringy manner. This confirms the statement that "the least reliable cements are the most easily manipulated." In packing, the cement will adhere to the cavity wall rather than to the packing instrument, though a film of the powder on the instrument will facilitate packing it. This cement has good working qualities and is very adhesive to dry tooth-surface. If the filling is not treated with hot water (protecting the soft tissues with napkins) a very objectionable copper-salt taste will be complained of.

(To be continued.)

COMPILATIONS.

HOW TO OVERCOME SOME OF THE DIFFICULTIES MET WITH IN CONTINUOUS GUM WORK.

BY HARRY ROSE, L.D.S., ENG.

1st. How to allow for the slight lowering of the bite, which occurs owing to a general shrinkage in the case after the first firing.

A very simple and effective way of obviating this difficulty is, after the platinum plate has been struck up, the teeth mounted and accurately fitted to the bite, and the case tried in the mouth, to cut two or three narrow strips of tissue paper, dampen them, and adjust to the alveolar ridge of model, then the plate with teeth attached can be replaced on the model and the plaster sections made as usual. The sections are made in the following manner: Make three shallow grooves in the front, and two on each side of the plaster model. The three front grooves are to serve as guides to retain the front plaster section, which is to hold the six front teeth in position, and the others to do the same for the four molars and bicuspids on each side. When the guides are made, place the case on the model, fasten it in position, so that it does not slip; now soap the surface of model and oil and wax the teeth, then mix up some plaster and apply it to the model, so as to cover the faces of the six front teeth and corresponding surface of the model. When hard trim it up neatly and bevel it from the distal edge of canines forward towards the front of mouth. The sides of this section are now soaped as well as the model, and the two side sections can be moulded at the same time. These three sections are so trimmed that they come up to but do not cover the crowns of the teeth. The fourth or crown section is for this purpose. The crown section is made by pouring thick plaster upon the crowns of teeth after soaping surfaces of the front sections, and this of necessity must be very thin where it covers the front teeth; it should be strengthened by having a piece of curved iron wire let into the plaster while in its soft condition. It is absolutely necessary that the sections present no undercuts, and that they part from the model and teeth without dragging; they are now ready to be lined with tissue paper. After the sections are trimmed up and removed, the plate and teeth are thoroughly cleaned, the tissue paper removed from model, and the plate allowed to fit up in its place again.

The teeth when inserted in the sections will be raised according to the layers of tissue paper used.

Three will usually be found sufficient to make up for the amount of shrinkage. In the event of a complete upper and lower set being made both models should be padded in the same way.

2nd. To strengthen and to roughen the plate, and to insert loops to hold the mineral compound firmly to the alveolar ridge.

Having, by trying in the mouth, ascertained the size of the plate required, take a length of soft platinum wire, draw it down to half pivotting size, then attach one end of it to the border of the plate with a clamp and solder with fine gold, the wire can then be bent and soldered a little at a time to conform to the plate, until the plate is quite encircled; this not only strengthens the plate and affords a support for the mineral compound. but enables one to give the edges of case a much better finish.

The roughening of the plate should be done with a triangular graver or the point of a sharp flat scraper, over every part of the plate that the mineral is required to cover.

To form the loops to hold the body to the plate holes should be drilled, and, wherever required, short lengths of soft platinum wire soldered in with fine gold, the pieces of wire can then be bent at different angles. Eight or ten of these loops will usually be found sufficient for an upper or lower set. As a further means of attaching the mineral compound to the platinum plate, we must not omit to paint it over with a layer of gum enamel, which should be dried on, before packing in the compound.

All soldering should be done with fine gold, the copper in ordinary gold discoloring the enamel, giving it a greenish tint.

3rd. To harden the mineral compound and render it easier of manipulation after moulding.

Some practitioners have found a difficulty in trimming up and putting an artistic finish on the moulded case, owing to the softness or rather friability of the mineral compound; this can be overcome by mixing it with a half tea-spoonful of gum tragacanth dissolved in water.

To dissolve the gum, take say three dwts. and place in a gallipot, then fill up with boiling water and place in an oven until it becomes like syrup. It should, when cold, be placed in a stoppered bottle ready for use.

4th. To replace a tooth or portion of the case that may be broken in trimming up.

It sometimes happens that a tooth gets disturbed or knocked out, while trimming up the case in its unbaked or soft condition; to replace it, thoroughly moisten the mineral compound, then wet the tooth, press into place, and finish with a damp spatula. To replace a portion of mineral that may flake off or break away, thoroughly moisten edges surrounding before adding fresh material to repair it.

5th. To cover the palate with gum enamel, after the platinum plate has been prepared and roughened, it should be slightly warmed, and then painted over with a thin film of gum enamel, this will quickly dry, after which one or two layers of mineral compound may be painted on with a large camel-hair pencil, reproducing the natural contours of the palate. It is necessary to have a thin layer of mineral compound in order to prevent the color of the platinum from being seen through the gum enamel. The other parts of the case having been packed with mineral compound, it should be placed, teeth upwards, on silex, in the fireclay pot, and more silex poured over it until it be completely covered. After gradually heating up, it is ready for insertion in the furnace.

THE FIRST FIRING.

According to my latest experience, it is safest to thoroughly vitrify the case at the first firing, so as to afford every opportunity for cracks or flaws to develop. If such should appear, let them be filled in with mineral compound, introducing into the crack or flaw, first of all a little water to encourage the compound to thoroughly flow in and fill it up completely. When dry the pink enamel can be painted on. On no account should a crack be filled up with enamel, as it will show a dark line when the case is finished.

TO PAINT ON THE GUM ENAMEL.

The enamel should be mixed quite thin, and painted on with a camel-hair pencil; if the moisture in the gum be absorbed too rapidly, the surface of the case should be moistened with distilled water as the gum is laid on. When the first layer has dried, another can be added in like manner, until it is about the thickness of a threepenny piece. If the gum enamel is put on too thick, it is apt to flow unevenly and curl up.

THE SECOND FIRING.

On no account must anything come in contact with the enamel during the second firing. The plate may be supported on two or three clean pieces of fireclay, so as to make it rest evenly, but nothing must touch the enamel. While the case is warming up, in order to test the heat in the furnace, it is as well to insert two or three trial pieces; the time that these take to fuse will indicate whether the furnace is at the proper temperature, and the length of time the case will require for baking; one must not omit, however, the usual test piece on a tobacco-pipe stem to go in the muffle at same time as the case.

The enamel should take about four minutes to fuse.

—*Dental Record.*

ALL SORTS.

Listerine and Glycerine, equal parts, painted on bruises will cause a prompt disappearance of swelling and discoloration.

Remedy for Hysteria.—To cut short attacks of hysteria and to prevent their recurrence, Rosser recommends the hypodermic administration of one-tenth of a grain of apomorphin.

Antiseptic Mouth Pearls, consisting of thymol, menthol, eucalyptol, vanillin and ethereal oils combined with sugar have been patented in Germany by Radlauer of Berlin. They are said to have a local action only and are recommended for children troubled with catarrhal affections.

Sandusky (F. R.) on A Convenient Dentimeter.—Make a loop of common fine binding wire, and place the free ends in *an ordinary pin vise* which will grip it tightly; place the loop over root or crown to be measured, and twist the wire closely to obtain a correct measurement.—*Dental Cosmos.*

Permanganate of Potash is fast becoming a popular antidote for all kinds of poisons. Not only is it efficacious against snake bite and morphine, but now an Alsatian, M. J. Austal, claims that it acts as an antidote for phosphorus, muscarine, strychnine, colchicine, oil of sabine and oxalic acid; at least in dogs, rabbits and frogs.

Weagant (G. H.) on A Useful Hint.—Occasionally we have a corundum wheel which will not fit a chuck—the whole being too large. An easy way to remedy this fault is to make a small band, larger than the size of the hole, place it over the end of the chuck and pour in some fusible alloy. Remove the band, place the chuck in the lathe, and with a chisel, turn down the alloy to fit the wheel.—*Dominion Dental Journal.*

Antiseptic Paper.—

℞ Bichloride of mercury, ʒ iiss;
Pure glycerin, ʒ vi;
Distilled water (which has been boiled and cooled), Oi. M

Make a thorough solution, and impregnate sheets of unsized paper, which are then to be allowed to dry. This paper may be applied over wounds, and fixed in position with a bandage.—*Therapeutic Gazette.*

Pyoctanine as a Remedy for Ptyalism.—In the *Annales des maladies de l'oreille, du larynx, du nes et du pharynx* there is a short abstract of an article by Heimann, published in the *Therapeutische Monatshefte*, in which the author relates a case of idiopathic ptyalism that had withstood various kinds of treatment, but was finally overcome by painting the whole of the interior of the mouth twice a day with a 1-to-1,000 solution of pyoctanine. The treatment lasted three weeks and the cure was permanent.

Trichloracetic Acid in Nose-Bleed.—Prof. Cozzolino (*Journal de Medicine de Paris*,) recommends in epistaxis the local application of a 3 per cent. solution of trichloracetic acid. The end of a probe is well wrapped in cotton, dipped into the solution and applied to the mucous membrane of the septum, whence generally proceed severe nasal hemorrhages. To prevent a burning sensation a little 10 per cent. solution of cocain is added. The hemorrhage will generally cease at once. It is superior to the traditional perchloride of iron in that it is aceptic and acts still better as a styptic.

Coating Aluminum.—A process for coating aluminum with other metals has, according to *Invention*, been discovered by Herr Neesen. The aluminum is cleaned by plunging it in a bath of hydrochloric acid or of caustic soda. It is then immersed in a solution of bichloride of mercury, which decomposes and amalgamates the surface of the aluminium, which is then plunged into the first bath again. After that it is sufficient to put the aluminium in a solution of a salt of the metal, gold, silver, etc., of which the coating is required. The layer is adherent and the metal can be soldered by the methods ordinarily employed.—*Journal British Dental Association.*

Grossland (J. H.) on Removing a Broken Drill or Cleaner from Root Canal.—After having enlarged the canal and loosened, if possible, the broken instrument, with the bulb syringe (the piston syringe will not serve the purpose) throw water into the canal with as much force as possible. The suction produced by the water on its return will often bring out the obstruction, sometimes throwing it entirely out of the mouth.

This is Dr, Pearson's (of this city) method, but having failed to induce him to write it to you, I do so, with the hope that it may benefit others as it has myself.—*The Busy Dentist.*

Sparks (R. E.) on A Profitable Way to Dispose of Solder Scraps.—Dealers cannot allow more than two-thirds as much for solder scrap as they charge for—say 18 k. solder. In crown and bridge work, solder scrap may be made as valuable as new solder. Clean all old backings and all old bits of plate having solder upon them, by dropping them into a bath of sulphuric acid and boiling for a few minutes, or leave in the bath over night. Wash them in clean water. Hammer each piece quite thin and cut into small pieces, and put into a bottle or box for use. They answer every purpose where cusps are to be filled, or any place where bulk of solder is required. To use them, first flow some new solder to the piece then add the scrap. The application of heat will flow the solder contained in the scrap and fuse the whole mass together. Should the surface be rough on account of the insufficiency of solder contained in the scrap, to cover the bits of plate contained in the same, add more solder.—*Dominion Dental Journal.*

Irregularity of the Temporary Teeth—Question and Answer.—Dr. F. E. Judson, Antigo, Wis., asks for information regarding the following case: A child two years old, has the four superior and inferior incisor teeth present in the arch, but the superior left central and lateral articulate inside the lower teeth, while the superior right central and lateral articulate on the outside in the proper manner. Now, if these are not regulated in such a manner that they will articulate correctly, will there be any danger of the permanent teeth being irregular?

If so, how can I best proceed to correct the irregularity for a child of that age? The irregularity is attributed to the child's falling several times on the floor and against other objects, while learning to walk.

The question was submitted to Dr. H. F. Harvey, Cleveland, O., who replies as follows:

"In compliance with your request I would answer the enclosed by saying that I should *not* disturb the temporary teeth as the position, or eruption, of the permanent teeth will *not likely* be influenced by them."

Holliday (R. A.) on Bridge-Work.—My experience has taught me not to rely on the hollow gold dummy. I will not say that they are never perfectly soldered, but will assert that they are oftener defective. The solid dummy should be used, but in most cases I prefer the porcelain facing. Dr. Hinman has shown me the following method for making solid dummies: To make a solid dummy using scraps and filings of gold plate, after obtaining a model of the case with abutment crowns in position, fit up the case with plain rubber teeth; remove each tooth separately and invest in marble dust and plaster, the buccal cups downward; when the plaster is hard remove the tooth and melt gold scraps and filings in the matrix thus made; while in the molten state press the gold into place with the smooth face of a hammer, or better still a piece of charcoal.

To make a nice joint with porcelain facing, bicuspid and molars: After stamping cusp of pure gold, twenty-eight gauge, paint with whiting the portion of cusp to be occupied by cusp of facing, and fill remainder of cusp with solder; after backing the facing with thin platinum place it in the cusp, which will be found to extend up a sixteenth of an inch on front of facing; attach with piece of wax until invested for soldering, remove the wax and contour with solder, being careful not to burnish the gold to buccal face of porcelain, until completion of bridge, for fear of cracking the facing. This will give as perfect joint as can be made with gold and porcelain.

It is important to have the teeth properly contoured with solder before the final investment for uniting the bridge, as it saves time and lessens the liability of facings to crack.—*Extract from the Busy Dentist.*

Hunt (W. A.) on The Treatment of Abraded Gums.—Mr. Hunt said he supposed there were no gentlemen present who were not familiar with certain cases of an irritable lower jaw, where the teeth were gone. The patient had what might be described as small sore islands, which were exceedingly tender, and they might want to relieve the plate *exactly* on that spot and no other. To effect it they wanted to take a little dot from that spot, and they measured from the median line with a pair of compasses. He would show them a simple plan which he had adopted with great comfort to himself in such cases. In this letter-writing age one had to use a great many postage stamps, and instead of throwing away the margins which he tore off them, he preserved them, and with a small circular punch he cut out little discs of paper from them; these were adhesive on one side, and non-adhesive on the other. To illustrate their use, he took a model of an edentulous under jaw painted black, so that members could easily see, and wetted, so as to be like the mouth would be. A moistened disc was then put on the supposed sore spot, sticky side up. The plate was put on the model, and on separating them, the little white disc disclosed itself adhering exactly and absolutely to the under plate at a place corresponding to the sore in the mouth, thus showing the exact spot (and no other) on the plate which required to be relieved. This simple plan was most efficient and saved much trouble. —*Journal British Dental Association.*

Bliss (F. W.) on An Improvement in the Downie Crown.—Prepare the root by grinding it down nearly to the gum margin, using a a corundum wheel that will leave a perfectly smooth surface. Bevel the anterior edge to an angle of 45 degrees, reaching nearly to the pulp canal. Parallel the sides with Evans' root trimmers, then fit accurately a platinum band, made of No. 32 U. S. gauge, to the root already prepared, trimming the upper part of the band to correspond to the contour of the gum, allowing it to reach a uniform distance of one line under the gingival margin. Now remove the band from the root and solder a piece of platinum on lower end of band two-thirds of its circumference, leaving the anterior one-third unsoldered. Return the cap just described to the root and adjust the loose anterior portion of the cap to the beveled edge. Then again remove the cap and solder the anterior portion in position. Select a plain plate tooth, color to match, and grind the upper portion to fit under the anterior part of the cap. A piece of iridioplatinum wire, either round or triangular, is fitted to the root-canal and a small hole is made through the bottom of the cap on a line with the canal much smaller than the wire; this wire is now driven through the hole in the bottom of the cap into the root-canal; the tooth already prepared is placed in position and the pins twisted around the post, which is also in position. Now remove the whole as above described, taking care to keep all the parts in position, and place it in the furnace without investment and solder with pure gold. After soldering place the crown on the root to see if it fits properly. If everything is satisfactory, back up with Downie's porcelain body, put into the furnace and fuse. In the first baking the body will shrink somewhat, but more can be added, covering the anterior portion of the band and fuseed again; the porcelain will fuse to the platinum as well as to the tooth and make a strong and natural piece of work. If, by miscalculation, we do not get the proper shade of body, it can be ground off with a corundum wheel and other shades added until the desired color is obtained, and we will have an ideal crown.

In conclusion, I wish to say inasmuch as this crown is an improvement on the Downie crown, and resembles it in appearance, I will point out the difference. The Downie crown depends on the porcelain largely for its strength. In this crown the metal part is all soldered together with pure gold, making it very strong and wholly independent of the porcelain for *its* strength.—*Pacific Coast Journal.*

Pedley (F. N.) on A New Porcelain Crown.—The porcelain crown is a copy of the human tooth sawn off at the neck, with the pulp chamber deepened antero-posteriorly in elliptical form, extending almost as far as the masticating surface of the crown; this chamber is roughened by fine ribs.

The head of the pin is elliptical and accurately fits the hollow in the crown. The pin is elliptical, which makes it easy to fit into the root by means of fissure burs.

The crown can be attached to the pin by osteo, gutta-percha, shellac, etc., or can be fused by means of powdered glass, or silicate with a lower melting point than dental alloy; my own experience is in favor of osteo. The pin can be bent at any angle and cemented into the canal with osteo or amalgam, or fixed temporarily with gutta-percha. The pins are made of three sizes, but can easily be altered to any shape by file and hammer. The root canal and pin should be roughened before attachment.

A special arrangement of the pin is made for two-rooted bicuspids; the pin is not fixed centrally but beneath one cusp. The cusps of the crown are made the same shape, so, by rotating the crown, the pin passes down the buccal or palatine root, whichever is the more convenient. I am now completing a graduated series of bifurcated pins which I believe will fit any two-rooted bicuspid. The crown can be combined with a gold collar beneath the gum in front teeth or bicuspids. When the articulation is so close that the pin is exposed in fitting the tooth, a gold backing could be soldered on. If there be no space for anything but a flat tooth the elliptical pin should be pushed through a piece of platinum moulded to the root and soldered.

The advantages claimed for this crown are :—

(*a*) It is the strongest and cheapest porcelain crown.

(*b*) The crown resembles a human tooth and the pin is almost the shape of the pulp canal.

(*c*) The crown can be cut and polished to any shape before the pin is attached to the crown.

(*d*) The pin can be quickly altered by anyone, is better adapted for two-rooted bicuspids, can be attached to the crown first or last, by cements or fusion.

(*e*) The crown is free from the outcrop of amalgam on the masticating or palatine surfaces, by which certain well-known crowns are weakened and disfigured.

During the last six months a large number of these crowns have been used—chiefly in hospital practice and not always under the most favorable circumstances, but with very good results. At first there was an impression that osteo would not hold the crown firmly. By way of demonstration I cemented a piece of the wire to one of the crowns in the usual way, and found that the exact strain produced by 100 lbs. of pig iron would not separate tho wire from the crown.—*Extract Journal Brit. Dental Association.*

Discussion on The Preparation and Shaping of Roots of Teeth with Reference to Banding and Crowning.*—DR. R. B. TULLER said : The whole secret of making a successful application of a false crown to a root bereft of its original crown, is, after pathological conditions have been treated, to have a mechanically perfect joining. If a band is used the root must be shaped to receive such band and permit of perfect contact. The sides must at least be parallel or beveled crownward. If the root has parallel sides the band must be made accordingly.

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* Proceedings of Chicago Dental Society.

If the root is beveled the band must take the same shape so that when in position there is contact at every point of its entire width. No spaces should be left to be filled up with cement. The same must be said so far as the whole cap and the pin that goes up into the canal are concerned. The cap should fit accurately and rest firmly, particularly at the periphery. The pin should fit the canal, or at least be in firm contact its entire length at four points, as for instance in the insertion of a square pin into a round hole, the four corners of the pin should be in firm contact with the walls of the canal its full length, so that there is not the least lateral play when the crown is put into place without cement. You know that all the glue in the world will not make a strong, durable piece of furniture unless the joining is perfect, and if that is perfect, the thinner the film of glue between the two parts the better. It is so with cement in fastening on crowns. Make your joints in all parts so perfect that but the smallest drop of thin cement is needed. This of course does not apply to gold shell crowns where the entire hollow is to be filled with cement, but the principal is the same so far as the shell crown encircles the root. The fitting should be as perfect and close as it is possible to make it. For gold shell crowns I endeavor to get a slight bevel of the the root, for all its strains must be borne by that contact, while other crowns, such as the Richmond, for instance, have a firm rest on the root as well as the support given by the dowel pin. Bands no doubt prevent root-splitting sometimes, but I believe an accurately fitting crown bearing as it should on its support and held by a properly fitted dowel, will without a band have little tendency to split the root. Give your crown no opportunity to tilt whether cemented or not and you will have little trouble with splitting or coming off.

There is much to be done very often in shaping roots for crowns, with bands or without. While I do not feel justified in attempting to put an expensive crown on some disabled roots, I find in many other cases I can take a pretty bad root and put it in condition to do good service as a support for a number of years. When roots are decayed as we frequently find them above the gum at one or more points, I find it possible to build them up with amalgam so as to present a very favorable case for a crown. To be able to treat such roots it is sometimes necessary to first build them up with amalgam. Copper amalgam I find is well tolerated by the soft tissues it comes in contact with when used to lengthen out one or more sides of a root.

From Dr. Fernandez I learned a method of shaping certain roots for gold shell crowns that I like very much. It is beveling the root only on the two sides, mesial and distal, leaving the other two as we find them and leaving the stump as long as possible. We measure for our band in the usual way and then shorten the measure a trifle, so that the band is just a trifle small. In forcing it onto the root the expansion caused by the two beveled sides draws in tightly the other two sides though their shape is flaring, and makes an accurate fitting band.

Some dentists will tell you that crowns never ought to be put on without bands. I have some patients and I presume all of you have, who will not submit to having roots prepared for bands, and I believe that it is good practice in many cases to put on crowns without them; but in such cases there is more absolute necessity of accurate joining and of fitting the dowel than when a band is used, first to have a joint that will exclude the secretions of the mouth, and again to have that firmness of contact that prevents any rocking.

In the preparation and shaping of roots then, there are two great principles to be observed, the treatment necessary to put the root into a perfectly healthy and aseptic condition, and shaping of both root and crown so that there shall be *coaptation* as perfect as possible. With the exception of shell crowns, leave no spaces to be filled up with cement. Make joints tight and then use the thinnest film of cement possible to seal the joining.

Dr. C. S. Case: I wondered when I read the title of Dr. Tuller's paper what could be said new in regard to the preparation of roots for crowns, and I concluded that probably nothing could be said new, because almost everything has been said and written relative to the preparation of crowns somewhere by some one. Still the reinforcement of the old methods, if they are good, is always a great advantage; especially in an operation which lacks, as crown work does, perfection in the majority of operations. It is not because crowns cannot be made artistically and mechanically correct; it is not because they will not remain permanently upon the teeth; but it is because the operation is not what it should be at the border where the band joins the root. There, it seems to me is where our whole efforts should be centered. If we insert a gold filling which extends beneath the free margin of the gums, and especially so if it laps upon the outside of the root, we spend a great deal of time in the finish of such fillings, never satisfied until all of that portion of the gold which forms a joint at the root is perfect. Why? Simply because we are aware that a slight overlapping edge of a gold filling at that point usually results in failure.

But how is it in regard to the fitting of a band for a crown? Here it necessarily must lie upon the outside of the root, and with all our care, with every effort we can make in regard to the finish of that band and the joint between the band and root, we cannot get it as perfect as we can a gold filling. In the first place, the root should be formed properly to receive the band and form as perfect a joint as possible. I believe if the band is made the proper size for the fitting of the root and the sides of the root are parallel, the joint at the free border of the band will be sufficiently close to permit a good finish, provided the band is made of the proper material and of the proper thickness. I think the principal object in the choice of material for a band should be with a view to the perfection of the joint. I believe that pure gold, or No. 22 caret gold, not coin, will be the final material for the banding of teeth for crowns, because it permits the shaping and burnishing of the band to fit the inequalities of the root. It is not possible always to shape a root so that it is perfectly even around its peripheral surface. There are depressions on the sides of bicuspids and other roots that it is impossible for us to entirely remove, and if the band fits tightly over the root, certainly there must be a V-shaped opening at this point which will need to be burnished in againt the root.

Much depends on the instruments that are used for removing the enamel and shaping the roots. I think that no more of the peridental membrane should be removed than is positively necessary because at that point (illustrating) the continuation of the mucous membrane of the gum loops back something like a curtain and joines and unites with the peridental membrane in nourishing the root. After the enamel is all removed it usually leaves the sides of the root parallel; though there are instances where it is necessary to remove some portion of the dentine in order to perfectly shape the root. Some instrument should be used that will extend under the free margin of the gums and cleave off the enamel without lacerating any greater portion of the tissues than is positively necessary, and the sides should be made parallel or somewhat cone shaped. The object of making the sides cone-shaped, and why it is so popular, is with the idea of "driving" the band on the root tightly, and in that way securing a perfect joint at the upper border of the band. I believe we have more failures in that particular than there would be if the sides were perfectly parallel and we had a band the proper size to fit on. Then you get a long parallel bearing on the sides of the root. Oftentimes if it is driven on to a flaring portion, you at once carry the upper border of the band out rather than hold it against the root. But the principal objection is where these little depressions occur on the sides of the root, though the band may fit so as to seem to be close and firm. If the material is thin enough and soft enough we should be able to fit and finish that band as carefully as we would a gold filling at that point.

Here is where the principal care and skill in crowning teeth will be centered. When you look at teeth and see the gums inflamed between them, you know that some irritating agent beneath the border of the gum is producing it. If you look at the border of a filling that extends beneath the gum margin and see the gum inflamed, you know that the gold has not been finished along the cervical border. This is a common condition with a large proportion of crowns. The gums are inflamed around the crowns simply because of the irritation of the bordor of the band. In those cases where there are spaces for the collection of food and the decomposition of secretions there will be considerable inflammation. It is not only necessary to have a perfect joint, but the edge of the gold should be smooth and thin. That is one of the things where there is not enough care taken. I believe in making a band of 28 gauge gold, then filing it so that it is thin at the edge, not leaving it rough, but smooth the edge perfectly; then if the band is put on a root with parallel sides it should come close to the root at the upper border. With your burnisher, if the material is sufficiently soft, you can press it into all the inequalities of the root.

Pay half as much attention, if you please, to finishing at that point as you would when you are finishing a gold filling that extends beneath the margin of the gum. That is not being done simply because they say a band cannot be burnished. You cannot push on the sides of the band. Why not? Because your bands are made of such thick and stiff material that they will not bend. If you push on the sides of them you are liable to push the crown out of its position.

Another thing. The post that extends into the canal is an important factor in the crowning of teeth. I believe that the post should be of very rigid material and should fit the canal. If the post fits the canal perfectly and is made of rigid material, it prevents the lateral movement of the crown.

A word in regard to the crowning of teeth without bands. I believe all the enamel should be allowed to remain on the tooth that is possible in inserting any of the crowns that are used without bands, and that, with the exception of the anterior portion, the crown should not extend beneath the margin of the gum. Care should be taken to leave all the enamel that is possible on the sides. If the joint between the crown and the root is free from the margin of the gum it can be cleansed perfectly, and you can see you have a perfect joint.

In regard to fitting crowns over live pulps, it is often claimed that if this is attempted the pulps will soon die. They no doubt will if the crowns are fitted in the ordinary way, that is, if the margin of the crown extends beneath the free margin of the gum. Remove as little of the enamel as possible so as to carry it down just above the bulge of the enamel, and at the point you can burnish the gold in against the crown so as to make a perfect joint and I believe the pulps will not die under these circumstances, because I have crowns on teeth for regulating purposes that have been on live teeth for at least two years and there has been no indication of death of the teeth. Some of them have been removed by me and the teeth are in perfect condition.

Dr. J. Austin Dunn: We very seldom have to take off a crown of any kind, but speaking of shell crowns I will give the society my method of taking them off.

I think most of us are in the habit of commencing at the cervical line and opening it up. My plan is to cut just over the stump of the root, make an oblong hole, and then with a narrow chisel wedged between the inside of the crown and the tooth stump, you will be surprised how easily it will move off.

Dr. Truman W. Brophy: One of the first considerations in the crowning of a tooth is to find out whether it is suitable to be crowned, whether it is in a proper condition of health to receive the crown. Many mistakes in my opinion are made by attempting to crown roots which would better be removed. When I make that statement I do not want to be understood as in any way discouraging the crowning of roots that can be made firm. I have had a number of cases come under my observation a very short time after the crowns were adjusted that were absolute failures. The work in the construction of the crowns was good and they were well adjusted, but the judgment of the operator was defective in trying to restore to usefulness a tooth that never could be made useful.

Dr. Louis Ottofy: For the purpose of trimming the enamel at the cervical border, of which Dr. Case has spoken, I will say that he is the inventor of the enamel cleavers that I think are for that purpose the most suitable of any on the market. The doctor is too modest to mention it himself.

In attaching a bandless crown, I see little necessity for cutting the anterior surface down under the margin of the gum. That kind of a tooth can hardly be fitted with absolute perfection to the root, no matter how carefully it is done, and if the tooth on the anterior surface is shaped to come to the margin of the gum, it is sufficient. There is no necessity of cutting it down beyond it. If the joint under the gum is not perfect the roughness will inflame the gums and the more injury takes place the more the gums will recede, until eventually the root is exposed to carious action. If the anterior surface of a Logan crown is fitted as perfectly as possible to the line of the gum, after the cement has set, you may take a cup-shaped rubber polisher and pumice, and with this the margin between the root and the crown can be polished smooth.

The attachments of half-crowns to teeth where the pulp is alive, it seems to me, is seldom necessary. If a tooth is not decayed badly, it is preferable to fill it. It is beyond filling, the probabilities are that an entire crown would be more serviceable.

I agree with Dr. Case in regard to No. 22 gold, and even prefer pure gold for a band; I see no advantage in using a wide band driven down on the root; there is but little strength gained from a band. The purpose, in my opinion, is more to make a good joint between the root and the crown.

Dr. J. G. Reid: I will just call attention to a little instrument I have seen for trimming the root of a tooth. I will not attempt to draw it upon the board. It is the invention of Dr. Taggart, and I am sorry he is not here to explain it himself. Some of you may have seen it, while others may not. It is certainly an instrument that every practitioner should have in his case. It is simply a small fissure bur centered with a copper disc, and it is soldered to any length that you wish from the point of the bur, or any length that you wish to fit the band to the tooth. You can have any number of lengths to accommodate any depth you wish to cut. This is soft soldered to the shank of the bur, then it is trimmed down to a very small circumference, so that a little wheel simply rests on the end of the root. It is more desirable probably in the central incisors than it would be in bicuspids and molars, but it does the work all right and it does not injure the soft tissues. It is very small and passes under the margin of the gum. It can be utilized many times when nothing else will do the work. I have not seen it in anybody's office but Dr. Taggert's. I have asked him how he solders it without drawing the temper of the instrument, and he says this is a delicate thing to do, although it is easy enough if you know how to do it. Many of you would think you could not do it. The disc in the first place is made large, perhaps one-quarter of an inch, or maybe an inch in diameter. He then puts solder on the edge of the disc and holds it in the flame of a lamp, and it is sufficiently hot to solder itself to the bur without drawing the temper in the bur. You cannot do this and make a small size without drawing the temper and injuring the instrument, but by having a large disc and holding it in the flame it is sufficient to flow the solder well, and then it is trimmed down in the engine to the center and you can have any depth you want.

Dr. J. E. Hinkins: I was just remarking to Dr. Brophy here that in fitting bands I use campho-phenique with cocaine on the gum as an anæsthetic. Take a piece of cotton, immerse it in a few crystals of that, and apply it around the gum before preparing the root and it gives good results.

Dr. J. N. Crouse: I do not want to take up too much time of the society, but I was going to describe how best to put on a bridge to a tooth where the molar tips forward and the bicuspid backward. I am indebted for the idea, or at least for the perfection of the idea, to Dr. C. M. Richmond, of New York. I shall describe the operation as if I was doing it myself. I should crown these two teeth as if I was not going to put on a bridge, then make a bridge to telescope these crowns. You shape the caps to fit over the crowns in proportion to the amount of strength you want, and you are governed somewhat by the occlusion of the upper teeth. It is unnecessary to make full rings around them. You can leave nearly the entire back half of the cap off; just leave a fringe, as it were, or a lug, on the back part and have the rest fit around. It makes a good bridge and you can take it off whenever you please. You can cement your cap on, then fit your bridge over that. It is a removable bridge. By carrying that system still further, in my opinion it will be the system of bridging in vogue during the next ten years. It requires nice, careful, mechanical work, but not more so, perhaps, than by the other method. It is easier to put on and take off.

Dr. W. B. Ames: It seems the ground has been so thoroughly covered that very little can be offered. I wish, however, to particularly mention a form of bur of which I make use to a considerable extent in preparing roots. It is the flame-shaped cavity bur. You are all familiar with the finishing bur of this shape. I had made some time since burs of this shape, cut as cavity burs are cut, and have found them to answer an excellent purpose in the shaping of proximate surfaces where it is difficult to get with a disc or such an instrument as Dr. Gallie describes, in which I want to say I am very much interested.

There is nothing I have ever found with which I can get in between and pare down the proximate surfaces as well as with this cavity bur. It suits me better than the bur described by Dr. Reid because in the fissure bur you have straight sides and nearly square end, whereas the flame-shaped bur has the taper which you usually wish to give to the root. I do not think there is any advantage in having a disc upon the bur, for if it can be held steadily it can be used to the depth desired and a disc seems to me a decided objection.—*Abstract Dental Review.*

EDITOR'S NOTES.

HEALTH A DUTY.

When it comes to the question of money or health, the average dental practitioner leans toward the former. Seeking dollars seems to be his one ambition. From early morn till late at night he toils, with hurried meals, little rest, little exercise. Is it to be wondered that constitutions have broken down and the habit of taking stimulants has been formed, by many who lead this sedentary life? Dentists, as a general rule, make little or no allowance of time for the purpose of exercise and recreation; in fact it is highly probable that dentists take less exercise than either lawyers, physicians or clergymen.

At the assemblage of The World's Columbian Dental Congress, a striking feature was the predominance of gray hair. In going from section to section this was apparent, for the hair of nearly all, both old and young, was more or less tinged with gray. Impressed with this observation at the time we wondered if it was a peculiarity of the dental profession. From subsequent observations we are inclined to believe that the sedentary life of the dentist, exhaustion of the nervous system, lack of sufficient exercise and consequent derangement of the digestive tract, has done much toward bringing about this premature condition.

"Perhaps nothing will so much hasten the time when body and mind will both be adequately cared for," says Herbert Spencer, "as a diffusion of the belief that the preservation of health is a duty." Few seem conscious that there is such a thing as physical morality. Men's habitual words and acts imply that they are at liberty to treat their bodies as they please. Disorder entailed by disobedience to nature's dictates they regard as grievances, not as the effects of a conduct more or less flagitious. Though the evil consequences inflicted on their descendants and on future generations are often as great as those caused by crime, they do not think themselves in any degree criminal.

It is true that in the case of drunkenness the viciousness of bodily transgression is recognized; but none appear to infer that if this bodily transgression is vicious, so, too, is every bodily transgression. The fact is, all breaches of the law of health are physical sins. We believe in the wisdom of preventing disease by proper attention to the laws of nature, and so far as we can judge, nature's method of removing effete products is through physical exercise; and this leads to the suggestion of hygienic means best suited to individuals who lead sedentary lives; referring especially to the dentist. Of the many methods, we shall mention but few.

First, good ventilation in the dental office is of utmost importance. Now that winter is here how many of our readers are working day after day in a closed room, exhaling and inhaling carbonic acid gas, over and over again, impairing bodily functions and bringing about a consequent depression. The location, arrangement and surrounding conditions of your office will suggest to you, better than can we, the proper means of ventilation.

Second, the time of a day's work should not exceed six or seven hours, with a full hour for the midday lunch.

Third, a walk in the open air before going to work in the morning, a walk or other bodily exercise in the open air after the day's work is done.

Fourth, stay away from your office evenings and Sundays. You need the rest.

Fifth, free your mind from the cares of the day past, or the coming morrow, by reading some good literature, either professional or otherwise, or engage in some other pursuit that is enlightening and elevating in its character. Shun all things that are degrading; be a man in every sense of the word.

NEW PUBLICATIONS.

A Compend of Dental Prosthesis and Metallurgy. By Geo. W. Warren, D.D.S., author of A Compend of Dental Pathology and Dental Medicine; editor of Richardson's Mechanical Dentistry, etc. 129 illustrations, 265 pages. Philadelphia: P. Blakiston Son & Co., publishers, 1894. Price, $1.50.

True to its title this book is not an exhaustive treatise on dental prosthesis and metallurgy, but a compend of these subjects. The author has presented the subject matter in a clear, yet concise manner, beginning with examination of the mouth and giving, in turn, the essential features in the making of various kinds of artificial dentures, from the taking of impressions to the finished plates, including a description of the electro-depositing process. About nine pages are devoted to the various forms of obturators, six pages to the construction of inter-dental splints, and thirty-three pages to crown and bridge work. The remainder of the book is devoted to Dental Metallurgy. The student will find it a useful aid in his study of this branch of dentistry.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH. By G. V. Black, M.D., D.D.S., Sc.D. Third edition. Philadelphia: The Wilmington Dental Manufacturing Co., publishers, 1894. Price, $2.50.

Three editions in scarcely more than three years shows the popularity of this book. When we stop to consider the important character of the work and the eminence of its author, we do not wonder at the increasing demand. In preparing this edition the endeavor has been to improve the detail without changing the form. The principal changes are in the nomenclature. Dr. Black says: "The reader will find the changes introduced limited to one new word, *axial*; two new word-forms, *occlusal*, in place of occluding, and *incisal* in the compound forms, and the completion of the systematization of the names of the angles of the teeth." Improvement has been made in some of the descriptions and a number of new illustrations have been added. The work cannot be too highly praised and it should be in the library of every dentist.

THE TRANSACTIONS OF THE WORLD'S COLUMBIAN DENTAL CONGRESS have just been issued and will be sent out as soon as possible. They comprise two large volumes and when our readers see them they can readily realize how so much time was required to translate, revise and thoroughly edit the manuscript, revise proof, etc., etc., for a work of such magnitude.

The Delta Sigma Delta Fraternity Journal is a new departure in dentistry. Number one has appeared and contains matters of special interest to this fraternity. Dr. L. L. Davis, Chicago, is editor, and if anyone can make it a success he can. The first issue is a very creditable one and we wish it prosperity.

Transactions of the National Association of Dental Faculties, 1894, is at hand. The contents have been published, in substance, in a previous issue of this journal.

BOOKS RECEIVED.

The Anatomy and Pathology of the Teeth. By C. F. Bödecker, D.D.S., M.D.S. Philadelphia: S. S. White Dental Manufacturing Co., Pub., 1894.

A Standard Dictionary of the English Language. New York; Funk & Wagnalls Co., publishers, 1894. Vol. I.